MQ–1C Unmanned Aircraft System Commander's Aircrew Training Program and Aircrew Training Manual

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Training Circular
No. 3-04.63

MQ–1C Unmanned Aircraft System Commander's Aircrew Training Program and Aircrew Training Manual

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Training circular (TC) 3-04.63 standardizes aircrew training programs (ATPs) and flight evaluation procedures by providing specific guidelines for executing unmanned aircraft system (UAS) aircrew training. It is based on the training principles outlined at the Army Training Network, located on the web at: https://atn.army.mil/index.aspx, under the Training Management tab. It establishes crewmember qualification, refresher, mission, and continuation training and evaluation requirements. This manual applies to the MQ–1C Unmanned Aircraft System (Gray Eagle) crewmembers and their commanders.

This manual, in conjunction with other Army publications, will help UAS commanders at all levels develop a comprehensive ATP. By using this TC, commanders ensure that individual and crew proficiency matches their units' mission and that unmanned aircraft crewmembers (UACs) routinely employ standard techniques and procedures. UACs will use this manual as a "how to" source for performing crewmember duties.

This manual provides performance standards and evaluation guidelines so that crewmembers know the level of performance expected. Each task has a description that details how it should be perform in order to meet the standard.

Standardization personnel, evaluators, and unit trainers will use this manual and Army Regulation (AR) 95-23 as the primary tools to assist the commander in developing and implementing this ATP.

TC 3-04.63 applies to the Active Army, the Army National Guard (ARNG), and the United States Army Reserve (USAR) unless otherwise stated.

The proponent of this publication is United States Army Training and Doctrine Command (TRADOC). Send comments and recommendations on Department of the Army (DA) Form 2028 (Recommended Changes to Publications and Blank Forms) or automated link: http://www.apd.army.mil through the unit commander to: Commander, United States Army Aviation Center of Excellence (USAACE), Fort Rucker, ATTN: ATZQ-TDT-F, Building 4507 Andrews Avenue, Fort Rucker, Alabama 36362-5000. E-mail questions and/or recommended changes to: usarmy.rucker.avncoe.mbx.atzq-tdt-n@mail.mil; or via the website at https://www.us.army.mil/suite/page/655026.

This publication has been reviewed for operations security considerations.

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Chapter 1

Introduction

The combat unit training objective is to conduct combined arms training (CAT). Therein, effective individual and crew training programs form the foundation for an UAS unit training program. Once the unit establishes individual and crew training programs, it must integrate these programs into an effective collective training program. As one of the commander's primary training documents, TC 3-04.63 links individual and unit collective tasks. The commander also uses AR 95-23, Army doctrine publications, and Army doctrine reference publications to link the unmanned aircraft (UA) operator's manuals, technical manuals (TMs), this TC, and individual training program to the collective training program.

TRAINING

1-1. Combat operations prove that Army UAS crews are full-fledged members of the combined arms team. Throughout air movements, air assault, reconnaissance, and UAS operations, Army aviation provides the land component commander with speed, agility, flexibility, and lethality often under diverse and difficult conditions throughout the fight.

1-2. UAS units and aircrews are continually faced with operational challenges requiring individual, crew, and unit proficiencies to perform in a very complex operating environment and sometimes unfamiliar fighting conditions. It is not uncommon for an aircrew to perform the duties normally associated with higher leaders in air-ground integrated operations. The requirement to "train as we fight" is highlighted by these operational realities.

ARMY DOCTRINE PUBLICATION 7-0 IMPLICATIONS

1-3. The principles of training established in Army Doctrine Publication (ADP) 7-0 apply to all units, including UAS units.

1-4. Train to sustain proficiency. In other words, sustain proficiency within the band of excellence applies to all units. UAS commanders must include UA maintenance in their band of excellence. The commander's challenge comes with the often competing demands of keeping maintenance within the band while sustaining training excellence. Individual, crew, and collective proficiency increases during surges of UAS training, such as field training exercises (FTXs), Army training and evaluation program (ARTEP) assessments and combat training center (CTC) rotations. However, during these same periods of high training intensity, UA maintenance operational readiness rates will gradually decrease. Conversely, as training intensity slows, the UA maintenance operational readiness rate should increase.

1-5. Well-trained units with well-maintained equipment are safe units. One way to ensure that both training and UA maintenance remain within the band of excellence is to ensure that UAS units properly plan, resource, and execute necessary recovery periods. These recovery periods must be captured on the short and near-term training plans. Recovery time will allow units to focus on attaining needed proficiency in individual and crew skills, while simultaneously concentrating on UA maintenance. During periods of intense training, UA accumulate deferred maintenance deficiencies. Therefore, the maintenance posture may be low within the band of excellence, if not below the band of excellence, at the conclusion of a major training exercise or period of sustained gunnery training. The commander's goal is to coordinate training and maintenance so that both remain within the band of excellence. If one or the other falls below the band, commanders must adjust their training/maintenance program to ensure that the low component quickly returns to within the band of excellence.

1-6.   UAS units must have a green training cycle to sustain proficiency. Additionally, during their green cycles, UAS units will need external resources from other units to train. UAS units require combined arms training (CAT) with elements such as an infantry platoon or artillery section. This should be a training event resource and not part of a separate tasking for mission support from the infantry or artillery. Unit training cycles should be used in conjunction with supported and supporting units to accomplish collective training of their mission essential task list (METL).

STANDARDIZATION PROGRAM

1-7.   The fielding of the Gray Eagle, while exponentially increasing the warfighting capabilities of UAS forces, creates diverse operational and training challenges. These increased capabilities require individual and crew proficiencies in very complex mission equipment packages, sometimes compounded by harsh flight environments. An ATP that focuses on operator currency rather than proficiency will no longer satisfy UAS readiness requirements, and will be a detriment to training and safety. The objectives of a standardization program are the improvement and sustainment of proficiency and readiness among Soldiers and units throughout the Army. Standardization is accomplished through the universal application of approved practices, procedures, and standards.

1-8.   The UAS commander is responsible for the unit's standardization program. The UAS commander must include standardization throughout the overall training strategy. The commander's primary standardization staff members include subordinate commanders, unit standardization personnel, unit tactical operations officers, master gunners and standardization instructor operators (SOs). Standardization must be implemented in all training tasks. Implementers must remember that standardization is not an end in itself. Standardization enables units of any size—crews, multiple-UA formations, teams, squads, companies, or brigades—to readily function together to accomplish the warfighting combined arms mission.

AVIATION TRAINING REFERENCES

1-9.   Aviation has a large library of training documents. For UAS units, this starts in the regulatory arena with AR 95-23 and works down to the individual/crew level with this TC. The UAS gunnery program is addressed in Field Manual (FM) 3-04.140; the associated collective tasks in the unit tasks lists (UTLs) and the 15-series Soldier training publications (STPs). A new addition to UAS training tool box is aircrew coordination training–enhanced (ACT-E). ACT-E is an interactive multimedia product that allows commanders to embed their aviation training and safety philosophy into each operator and ensure they understand the aspects of risk management.

1-10. Integration of lessons learned from training and ongoing operations provide a critical tool that allows us to enhance training based on current trends and the operational environment. Successful integration of lessons learned depends on two things: submission of observations, insights, and lessons from the field and consideration of lessons learned when developing unit training strategies. The aviation toolbox uses; https://www.usaace.army.smil.mil as our means of accomplishing both processes.

RESPONSIBILITIES

COMMANDER

1-11. The commander, in accordance with (IAW) ADP 7-0—
*   Is the primary training manager and trainer for the unit.
*   Is responsible for safety programs, standardization programs, and ATP.
*   Trains based on the unit's wartime mission, maintains standards, and evaluates proficiency.
*   Provides the required resources and develops and executes training plans that result in proficient individuals, leaders, and units.
*   Integrates UAS into the entire spectrum of operations in the units' operational environment.
*   Has subordinate leaders (officers and noncommissioned officers [NCOs]), instructor operators (IOs), and standardization personnel that help plan and prepare UAS training.

Note. Commanders must understand and use subordinate leaders to support the execution of the standardization program—in synchronization with the ATP.

BRIGADE COMMANDER

1-12. The brigade commander is responsible for the following:
- Planning, integrating, and providing guidance and resources for battalion training (live and virtual training).
- Training battalion commanders and evaluating companies.
- Brigade safety and standardization programs and the ATP.
- Supporting the division or corps commander's combined arms training goals and wartime mission essential tasks.
- Integrating UAS into the entire spectrum of operations in the brigade, division, or corps operational environment.
- Training subordinate leaders such as operations staff officers (S-3s), standardization instructor operators (SOs), IOs, aircraft commanders (ACs), and unit trainers (UTs) to implement the ATP.

STATE ARMY AVIATION OFFICER

1-13. The state Army aviation officer (SAAO) serves as the principal UAS staff officer to the respective Adjutant General in all matters concerning ARNG UAS. The SAAO is also responsible for the following:
- Establishing and overseeing (supervising) the state/territory ARNG UAS program, including UAS safety, maintenance, standardization, operations, and training.
- Providing guidance on UAS matters to all UAS and unit/facility commanders.
- Coordinating use of ARNG UAS assets by the various organizations within the state/territory.
- Supervising (as the full-time support SAAO) Army aviation support facility, Army aviation flight activity, limited Army aviation support facility, and Army aviation operating facility supervisors within the state/territory.
- Serves as Chair of the State/Territory Standardization Committee.

BATTALION COMMANDER

1-14. The battalion commander is responsible for the following:
- Executing the ATP as the primary training manager for the battalion.
- Administrative authority IAW AR 95-23.
- Training company commanders and evaluating platoons.
- Training and integrating the company into combined arms training.
- Participating in the subordinate company's training development process and ensure they utilize the live and virtual resources available to maximize their effectiveness.

Note. Battalion commanders must understand and use subordinate leaders to support the execution of the standardization program in synchronization with the ATP.

OPERATIONS STAFF OFFICER

1-15. The S-3 is responsible for the following:
- Operations and training as the commander's principal staff officer.
- Determining and allocating training and mission resources, planning and conducting training inspections, and compiling training records.
- Identifying training requirements to prepare and expedite training programs.
- Executing the ATP as primary assistant to the commander.

> *Note.* The platoon leaders, IOs/SOs, UTs, and ACs assist the commander in ensuring crews are properly trained.

COMPANY/TROOP COMMANDER

1-16. The company/troop commander is responsible for the following:

- Integrating the company/troop into the combined arms fight and the management of the company's ATP.
- Administrative authority IAW AR 95-23 as the commander of the ATP.
- Integrating the platoons and executing company training.
- Training platoon leaders.
- Ensuring that Soldiers and aircrews are properly trained at the individual, crew, and unit collective levels.

PLATOON LEADER

1-17. The platoon leader is responsible for the following:

- Crew training. (Unit IOs assist the platoon leaders in ensuring crews are properly trained.)
- Ensuring their aircrews are proficient in tactics, techniques, and procedures (TTP) outlined in the appropriate FMs and this TC's appendix A.
- Developing proficiency in the system and to attain mission coordinator (MC) status. This is also the entry level aviation leader position for gaining a basic understanding of aviation maintenance management and maintenance training requirements.
- Assisting the commander in developing and implementing all unit safety programs.

> *Note.* Platoon leaders are at a critical point in their aviation careers. Their challenge is to become technically and tactically proficient aviation leaders.

> *Note.* Platoon sergeants play a key role in the professional development of a platoon leader's aviation expertise.

OPERATIONS TECHNICIAN

1-18. The UAS operations technician is responsible for the following:

- Coordinating airspace and frequency requirements and acts as the Army liaison for all UAS missions.
- Articulating requirements for UAS collection and integrating UAS into collection strategies.
- Providing information to cue other collection assets and assist targeting by coordination re-tasking of the UAS.
- Supervising UAS unit standardization program IAW all applicable guidance.
- Supervising UAS unit safety program IAW all applicable guidance.

SAFETY OFFICER

1-19. The safety officers are responsible for assisting the commander in developing and implementing all unit safety programs.

STANDARDIZATION INSTRUCTOR OPERATOR

1-20. The brigade/battalion/company standardization instructor operator assists the commander in developing and executing the unit ATP. SOs and IOs are responsible for the following:

- Providing quality control for the ATP through the commander's standardization program.
- Serving as the primary technical and tactical experts for the standardization program.

- Providing expertise on unit individual, crew, and collective training to the commander.
- Advisor and subject matter expert for all UAS related issues.

Note. SOs and IOs will be ACs at all levels (platoon SO/battalion SO).

AIRCRAFT COMMANDER

1-21. The AC is responsible for the following:
- Acting as the unit's first-level trainer.
- Proficiently operating the UA and all aspects of the unit METL.
- The safe operation of the UA, the safety of all crewmembers, and the conduct of all operational and training aspects of a specific mission.
- Performing maintenance functional checks and must be able to objectively access and document the unmanned aircraft performance according to appropriate maintenance standards.

Note. The skills required to train fellow operators and to be an effective AC are gained by actively participating in training events, mentoring by UAS leaders, and seeking professional development. A critical aspect of a unit's AC program is to ensure that ACs are chosen—regardless of rank or position—that have the maturity required to execute AC duties. (See chapter 10 for recommended AC selection and designation program.)

UNIT TRAINER

1-22. The UT is responsible for the following:
- Instructing in areas of specialized training (light amplification by stimulated emission of radiation [LASER], weapons, payload, and airspace).
- Assisting in unit training programs and in achieving established training goals.

UNMANNED AIRCRAFT CREWMEMBER

1-23. UACs perform duties that are directly related to the in-flight mission of the UA. The UAC is responsible for the following:
- Starting the engine, and takeoff and landing the UA.
- Controlling the flight of a UAS or the operation of its mission equipment.
- Remaining current IAW appendix A.
- Taking advantage of every opportunity to become and remain tactically and technically proficient crewmembers, including executing their individually tailored self-development plan to meet designated goals. The individual operators should have the goal of achieving AC status and the ultimate objective of IO status.

CREW CHIEF

1-24. The crew chief is responsible for the following:
- Preparing and assisting AOs in the maintenance and recovery of the UAS.
- Coordinating actions of ground crewmembers.
- Training and evaluating crew chiefs and other ground crewmembers.

GROUND CREWMEMBER

1-25. Ground crewmembers (maintainers, technical inspectors, avionics technicians, armament personnel, and so forth) perform duties that directly relate to the maintenance mission of the UAS, but are not essential to the in-flight operation of the UA.

MAINTENANCE CHIEF

1-26. Maintenance chiefs help the commander develop and manage the unit's maintenance program. The commander and first sergeant select the maintenance chief based on skills, qualifications, and experience. The maintenance chief is responsible for the following:

- Assisting the commander as the primary advisor for all maintenance programs.
- Providing guidance and mentorship to assigned repair personnel on troubleshooting procedures for all aircraft systems, subsystems, associated weapons systems, and component repair.
- The status of equipment on-hand and any problems that arise affecting the overall maintenance and repair operation of the sections.
- Assisting and advising the platoon leader and maintenance officer ensuring personnel are trained on the most current assigned maintenance equipment and prepared to operate in any operational environment.
- Scheduling UA using maintenance flow charts or other means to ensure mission completion and the most efficient use of maintenance assets.

MISSION COORDINATOR

1-27. The MC is responsible for the following:

- Coordinating all external needs as well as crew coordination.
- Coordinating operations from pre-mission through post-mission, to include disseminating information.

FLIGHT SURGEON/AVIATION PHYSICIAN ASSISTANT

1-28. The flight surgeon (FS)/aviation physician assistant (APA) is responsible for the following:

- Acting as the commander's primary advisor on the health and welfare of unit members and their families.
- Acting as the commander's primary trainer/evaluator for all annual aeromedical requirements.
- Monitoring the training environment to ensure the mental and physical well-being of unit crewmembers. The FS/APA also provides medical training, support, and advice to crewmembers and commanders.
- Direct access to commanders at all levels and participation in all major inspections. The FS/APA maintains results and files of these inspections.
- Participating as a member of all aviation safety and standardization councils.

MASTER GUNNER

1-29. The commander will designate a master gunner (MG). The MG is the commander's gunnery technical advisor who helps the commander and the staff plan, develop, and conduct gunnery training. The MG's primary duty is to help maintain the continuity and focus of the commander's gunnery training program. The MG is responsible for the following:

- Organizing range firing exercises.
- Setting up range firing exercises:
    - Coordinating target arrays.
    - Coordinating exposure times for targets.
    - Coordinating maneuver box verification.
    - Coordinating setup of all ranges to ensure meeting the standards in IAW TC 3-04.45.
- Preparing a surface danger area diagram and range overlay, if required as follows:
    - Preparing scaled ranges or rehearsal areas, if required.
    - Ensuring proper conduct of range firing exercises.
    - Supervising crews to ensure proper pre-gunnery checks are completed.
    - Conducting remedial training on site, as needed.

- Ensuring that a standard aircrew evaluator program is implemented.
- Ensuring standardization of all gunnery related evaluations.

INDIVIDUAL, CREW, AND COLLECTIVE TRAINING

1-30. To design and manage an effective ATP, the commander must analyze individual, crew, and collective training.

> *Note*. This TC describes training requirements for crewmembers. It will be used with AR 95-23 and other applicable publications. This TC and the unit's METL are used by the commander to combine individual training with crew training.

INDIVIDUAL TRAINING

1-31. Individual training is the building block of crew training. Such training is the responsibility of the aviation platoon leader, with assistance from the unit IO. The operator's manual and this TC guide the platoon leader and the IO in training the individual to mission-ready standards. UACs must ensure that they satisfy all ATP requirements.

CREW TRAINING

1-32. Crew training is the first step in developing a unit collective training plan. It is the building block of team training. The platoon leader and unit IOs train the crew. The platoon leader ensures that the crew is proficient in this TC tasks and in the tactics, techniques, and procedures outlined in other appropriate publications.

1-33. The commander, subordinate leaders, and trainers must implement the aircrew coordination program into crew training. Aircrew coordination is critical training—it improves mission performance and enhances safety. To effectively employ modern Army UAS with their complex missions, more than one crewmember must perform crew tasks.

COLLECTIVE TRAINING

1-34. Collective training encompasses all training, including combined arms operations. The unit's METL links crew and collective training. These tasks are collective tasks that support the unit's wartime mission. Along with this TC, ADP 7-0 helps the commander link individual and crew training with the tasks required to execute the wartime mission. The mission training plan (MTP), applicable FMs, and unit standing operating procedures (SOPs) establish the tasks to be performed, the conditions under which the tasks are performed, and the standard that the unit must maintain for unit readiness.

COMBINED ARMS TRAINING

1-35. Combined arms training is the training pinnacle in the preparation of combat power. It is collective training that is associated with mission command, movement and maneuver, intelligence, fires, sustainment, and protection. Combined arms training integrates all associated combat capabilities and applies that ability on the battlefield at the critical place and time. Combined arms training normally is executed at the battalion task force level and above. However, collective training at any level is considered combined arms training when conducted with another combat arm. Some examples of collective training are: training to support brigade or division exercise evaluations, CTC rotations, deployment exercises, combined arms live-fire exercises, brigade command post exercises (CPXs), and battle command training programs.

INDIVIDUAL AND COLLECTIVE TRAINING INTEGRATION

1-36. To achieve maximum training results from limited resources, planning must be detailed and flying hours devoted solely to individual training must be kept to a minimum. Integrating individual continuation

training into collective training maximizes every hour of flight time. Units must incorporate collective training into every element of the ATP.

INDIVIDUAL TASKS AND COLLECTIVE MISSION-ESSENTIAL TASKS

1-37. Tasks are clearly defined, measurable activities that Soldiers and units must perform. These specific activities contribute to the accomplishment of missions or other requirements.

1-38. The link between the collective mission-essential tasks and the individual tasks that support them is critical to the battle-focused training concept. The commander plans, prepares, executes, and evaluates training based on the METL. The commander selects critical battle tasks from the subordinate unit's METL and emphasizes the execution of those tasks during training and evaluation.

TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS

1-39. It is difficult to train and sustain a modern UAS unit at an acceptable level of proficiency without using training aids, devices, simulators, and simulations (TADSS). Resources, environmental restrictions, personnel turbulence, and safety constraints put serious limitations on the dictum to "train as we fight." ATPs must reflect structured training programs and tools that maximize the use of available TADSS for individual, crew, and collective training. Structured technical and tactical training programs, combined with supervision and after action reviews (AARs), are necessary for effective individual, crew, and collective simulation training periods. Again, the UAS combined arms training strategy (CATS) maximizes the use of flight simulators for individual, crew, and collective training tasks.

1-40. UAS has a very thorough complement of flight simulators to enhance individual, crew, and collective training events. At the individual/crew level, most UA have flight simulators that enable commanders to tailor their training programs and apply a requisite amount of rigor to the tasks. The TADSS has collective fidelity, so that commanders can build their collective training efforts and have the capability during mission and gunnery rehearsal with the full ability for AARs.

1-41. Leveraging flight simulators and simulation will only be as effective as leadership is with training management and understanding the training capabilities. UAS commanders at all levels enjoy a considerable training capability and capacity as a result of the Army's significant investment in UAS training. The current execution of Army force generation is a significant challenge but also presents opportunities to exploit simulation for readiness level (RL) progression and as complementary building blocks for gunnery, call for and adjust fire, manned/unmanned teaming and collective training.

SITUATIONAL TRAINING EXERCISES

1-42. Situational training exercises (STXs) are limited, mission-related exercises. STXs train crews or crewmembers to execute one collective task or a group of related tasks and drills through practice. (The terms "situational exercise" and "scenario" are used synonymously.) Based on the unit METL, commanders may modify or expand STXs to meet special mission requirements. These exercises aid in the transition from individual task proficiency to collective task proficiency. The STX—

- Focuses training on weaknesses identified in previous training and evaluations.
- Provides repetitive training on parts of missions.
- Saves time by providing information needed to develop training.
- Allows the UAC, ground crewmember, or unit to practice selected critical parts of the mission before rehearsing the entire mission.

1-43. Commanders may develop STXs as a training and ATP management tool. If used, the STXs should permit simultaneous accomplishment of individual and collective tasks.

1-44. The commander develops STXs that support METL requirements by—

- Selecting the battle task to be performed. A battle task is a task that must be accomplished by a subordinate unit organization if the next higher headquarters is to accomplish a mission-essential task.
- Establishing the conditions and standards for the selected battle task (using this TC's appendix/MTP).
- Developing a mission statement to support the battle task. One STX may have numerous mission statements.
- Identifying the company METL task that supports the battle task.
- Developing collective supporting tasks (using MTP tasks).
- Applying time standards.
- Identifying references.

1-45. Situational training exercises should have realistic training objectives. The commander must ensure that the STXs **do not** become "canned" training. The training goal must be clearly defined, and all participants in the training must understand the objectives.

1-46. The ARTEP MTPs give units a clear description of what and how to train to achieve wartime mission proficiency. ARTEPs elaborate on wartime missions in terms of comprehensive training and evaluation outlines. ARTEPs also provide exercise concepts and related training management aids to help field commanders plan and execute effective unit training. The applicable ARTEP/MTP gives examples for developing and using STXs.

BATTLE ROSTERING

1-47. Battle rostering is the designation of two or more individuals to routinely perform as a crew. Studies show that certain specific performance areas may benefit from battle rostering. Commanders may battle roster crews at their discretion. However, commanders must be aware that prolonged battle rostering may produce crew complacency, overconfidence, implicit coordination behaviors, and nonstandard procedures, which result in a degradation of crew proficiency. Therefore, battle rostering is most beneficial when used for short periods, such as in training exercises and ARTEPs.

> *Note.* When battle-rostering crews, commanders should consider individual, flight, and unit mission experience. Commanders should also consider individual personalities and maturity.

RISK MANAGEMENT

1-48. Commanders are responsible for the effective assessment of risk when they establish a unit training program. Chapter 6 provides a simple decision-making process that will help the commander balance training demands against risk. Commanders should consider both the individual and the crew when they assess mission risks. Commanders also must use risk management concepts continually to prevent the unnecessary loss of Soldiers and equipment.

AIRCREW COORDINATION

1-49. Aircrew coordination is a set of principles, attitudes, procedures, and techniques that transforms individuals into an effective crew. It is a vital part of the overall ATP. As directed by DA, all crewmembers must become aircrew coordination qualified:

- **Qualified instructors.** An SO or IO meets the requirement to train and evaluate aircrew coordination training–enhanced (ACT–E). Properly trained UTs may conduct the academic and flight training, but are not authorized to conduct the evaluations. A qualified SO or IO can qualify other SOs and IOs.
- **Documentation.** The aircrew coordination qualification will be annotated on the individual's DA Form 7122-R (Crew Member Training Record). It also will be noted in the Remarks section of the individual's DA Form 759 (Individual Flight Record and Flight Certificate–Army).

1-50.   Aircrew coordination should be emphasized during RL progressions. It will be evaluated during the annual proficiency and readiness test (APART).

1-51.   Including aircrew coordination in this TC's task descriptions reflects the philosophy that an exterior inspection, engine start/systems checks, flight, or after landing procedure tasks is not an individual undertaking; each task can be performed more effectively and safely by the coordinated efforts of the entire crew. The revision of this TC will include individual and crew-coordinated actions in the task descriptions.

CREW STATION SEAT DESIGNATION

1-52.   The commander will designate a crew station(s) (A seat and P seat) and duties authorized for each crewmember. The individual's DA Form 7120-R (Commander's Task List) must clearly indicate all crew station designations and duties authorized. Crewmembers will be trained and must maintain proficiency in each crew station they are designated to occupy. SO and IO must maintain proficiency in both seats. Operators will be evaluated in each seat during APART evaluations. This does not mean that all tasks must be evaluated in each seat. The appendix lists which tasks are to be completed in which mode and crew station. Failure to require UACs to perform all authorized duties will degrade individual and collective task skills.

SYMBOL USAGE AND WORD DISTINCTION

1-53.   **Symbol usage**. The diagonal (/) indicates three options—for example, SO/IO means either one (SO) or the other (IO) or both (SO and IO).

1-54.   **Word distinctions.** The following terms carry special connotations as identified.
- Warnings, cautions, and notes.
  - A warning identifies and highlights an essential operating or maintenance procedure, practice, condition, statement, which if not strictly observed, could result in injury to, or death of, personnel or long term health hazards to the person performing that procedure.
  - A caution identifies and highlights an essential operating procedure or maintenance procedure, practice, condition, statement, which, if not strictly observed, could result in damage to, or destruction of, equipment or loss of mission effectiveness.
  - A note highlights an essential operating procedure or maintenance procedure, condition, or statement.
- Will, must, should, can, and may. These words distinguish between mandatory, preferred, and acceptable methods of accomplishment.
  - Will or must indicates a mandatory requirement.
  - Should, indicates a preferred, but non-mandatory, method of accomplishment.
  - Can or may indicates an acceptable method of accomplishment.

AIRCRAFT IDENTIFICATIONS

1-55. Aircraft identifications conventions are as follows:
- Aircraft basic mission (class/type). Identifies the primary function and capability of an aerospace vehicle (such as attack, fighter, helicopter, patrol, transport, trainer, unmanned). Aircraft basic mission is represented by a letter of the alphabet (such as unmanned [Q–1], fighter [F–16], transport [C–135], trainer [T–38], and bomber [B–1]).
- Modified mission. Identifies modifications to the basic mission of an aircraft. The modified mission identification appears to the left of the basic mission symbol (such as reconnaissance [RQ–7B], multi-mission [MQ–1C], tanker [KC–135R], cargo [CH–47D], and antisubmarine [SH–60B].
- Aircraft design (model). Identifies major changes within the same basic mission. Design numbers appear to the right of the basic mission symbol, separated by a dash (such as Q–5, F–18, H–60, and C–17).

- Aircraft series. Identifies the production model of a particular design number representing major modifications significantly altering systems components. Consecutive series symbols appear to the immediate right of the design number (such as RQ–7A and RQ–7B, KC–135A and KC–135R, AH–64A and AH–64D).

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Chapter 2

Aircrew Training Program

This chapter describes requirements for qualification, RL progression, and continuation training. Crewmember qualification requirements are IAW AR 95-23 and this TC.

GOAL AND APPLICABILITY

2-1.   The ATP consists of qualification, refresher, mission, and continuation training. The goal of the ATP is to produce mission-ready UAS units.

2-2.   The ATP applies to crewmembers that perform duties controlling the flight of a UA or the operation of its mission equipment as well as starting the engine, takeoff and/or landing the UA.

> *Note.* Within 14 calendar days after reporting for duty, all UACs in an operational status are members of the unit's ATP. Operators must present their individual aircrew training folder (IATF) and individual flight record folder (IFRF), if applicable, to the commander or the commander's designated representative upon signing into the unit. RL status is determined by the commander's evaluation.

INDIVIDUAL/CREW QUALIFICATION

2-3.   Operators arrive at the unit with various levels of experience. They are recent graduates of a UAS qualification course or they are already proven operators with varying levels of UAS background. These aircrew members progress from a RL based on a commander's evaluation, to RL1 by demonstrating proficiency in tasks required by appendix A and those tasks selected by the commander based on the unit's METL. Prior to designation as RL1, training must be conducted and assessed by the appropriate UAS trainers. This process is explained in detail in this TC. This is a prescriptive process mandated by AR 95-23 and must be strictly followed to ensure standardization across our force.

2-4.   The ATP is the commander's program for training combat-ready crewmembers. This training covers the entire spectrum from task proficiency at the individual level, to crew proficiency, and finally to unit proficiency in executing mission-essential tasks necessary to accomplish successful joint and combined operations as defined in FM 7-15. As a minimum, all ATPs will include—

- A description of the benefits to be gained through standardization.
- Objectives to be achieved.
- The procedures or actions to be standardized described in detail.
- A specific plan for implementation.
- An effective procedure for enforcement.
- Delineated responsibilities.

2-5.   The ATP applies to all Army UAS operators in operational flying positions. Other individuals authorized to perform crewmember duties with Army UAS will comply with AR 95-23 and all appropriate supplements to AR 95-23 and this TC's appendix.

2-6.   Commanders use publications such as ADPs, ADPRs, ATTPs, aircrew training manuals (ATMs), ARTEPs, UTLs, MTPs, FMs, TCs, and the CATS to develop the unit's ATP. The first step in this process is an evaluation of the unit's METL to determine training requirements.

2-7.   The role of a leader/trainer (implementer) in ATP development is as follows:

- Leaders and trainers are the primary unit personnel tasked with implementing the ATP, especially at the individual and crew training levels.
- As the commander develops the ATP, input from the unit's implementers is vital. Individual and crew training is the foundation on which the ATP is built. Unit leaders and trainers implement and advise the commander on required tasks, applicability of mission and additional tasks related to unit roles and METL-based missions, geographical factors that affect training, operational employment, training assets, and recurring training issues.
- After analysis of unit METL, implementer input, and higher commander's guidance, commanders develop a supporting individual commander's task list (CTL) for each crewmember (chapter 5 contains more detailed guidance on the CTL.) Commanders will then establish a short-range, long-range, and near-term training plan to ensure crews gain and maintain proficiency in unit collective tasks. Implementers must be familiar with the commander's training intent and with the three training plans to successfully implement the ATP.

2-8. The commander will establish an ATP appendix to the unit's SOP. This appendix will address specific requirements for the following:

- The conduct of training.
- Crewmember and crew evaluation.
- AC training, assessment, and evaluation.
- Assessment of the ATP effectiveness.
- Revision of the ATP.
- The requirements from DA Pam 385-40, DA Pam 385-90, as applicable.
- Refer to chapter 10 of this TC for examples of SOP contents.

MISSION QUALIFICATION

2-9. RL 1 operators have completed RL progression training and demonstrated the proficiency to be a member of a battle-rostered crew. RL 1 operators train as crews to sustain and continually improve base task proficiency, proficiency in the conduct of the unit's unique METL requirements, and refine the skills necessary to perform as part of the unit.

2-10. The use of simulation is very useful in the conduct of training. Flight simulators are excellent for use in training emergency procedures, maneuvers that are infrequently conducted in the UA, and as a rehearsal tool for complex portions of operations. Flight simulators can also be used to correct negative trends found through analysis of accidents and to practice those skills in a low risk environment. As the fidelity of our flight simulators improves, environmental training can be very beneficial to our crews.

> *Note:* The simulator used for training and evaluation must be a TRADOC approved and accredited MQ–1C operator simulator which replicates the physical and functional capabilities of the actual ground control station (GCS) and its subsystems necessary to perform all approved MQ–1C critical tasks to appropriate standard without precluding negative habit transfer.

TRAINING YEAR

ACTIVE ARMY, ARNG, AND USAR

2-11. The ATP training year is divided into semi-annual training periods. For Active Army, ARNG, and USAR crewmembers, the first training period begins the first day following the end of their birth month and continues for six months. The second training period begins the first day of the seventh month and continues through the end of the crewmember's birth month. For example, the first training period for a crewmember born on 15 April begins 1 May and ends 31 October. The second training period begins 1 November and ends 30 April.

DEPARTMENT OF THE ARMY CIVILIANS

2-12. The unit commander designates the training year for Department of Army civilian (DAC) crewmembers.

FLIGHT ACTIVITY CATEGORIES

2-13. All operational UAS flying positions will be designated by the brigade-level commander as one of three flight activity categories (FACs)—FAC 1, FAC 2, or FAC 3. For units that are not organic or attached to a brigade or where a brigade level command does not exist within the state, the SAAO will assign FAC designations. The commander notes the FAC level, based on their organizational position, on each individual crewmember's CTL. Flight task requirements for each table of organization and equipment (TOE) or table of distribution and allowances (TDA) position determine FAC designation. Commanders will not change a FAC designation merely to reduce the individual or unit flying-hour requirements, proficiency requirements, or to accommodate an individual's preference. FAC designations are for positions, not individual operators.

2-14. Crewmembers that are over-strength/over-structure to modification table of organization and equipment (MTOE)/TDA operational flying positions and assigned to excess can be designated FAC 1, FAC 2, or FAC 3 as determined by the brigade level commander and required by resource constraints. Waivers to FAC 3 requirements must be approved IAW AR 95-23.

2-15. Operators in the first three years of their initial operational assignment(s) in their assigned UA after graduation from a UAS qualification course should not be assigned to FAC 3 positions.

Note. Crewmembers assigned to an excess position are not authorized an alternate or additional UA.

Note. FACs **do not** apply to DACs, or warrant officers (WOs) that hold a United States Army occupational specialty of 150U (Tactical Unmanned Aerial Systems Operations Technician) and/or officers holding a United States Army aeronautical rating that have not completed the Headquarters, Department of the Army (HQDA) approved UAS qualification course and are performing payload operator duties on a limited basis.

FLIGHT ACTIVITY CATEGORY 1

2-16. FAC 1 positions require a high degree of flight proficiency in the tactical employment of the assigned UA. The higher semi-annual flying-hour minimums required of FAC 1 operators assigned to FAC 1 positions reflect this need for increased flight proficiency. Operators with less than three years of their initial operational assignment(s) in their assigned UA after graduation from a UAS qualification course should be assigned to FAC 1 or 2 positions and be assessed FAC 1 flying hour minimums. Commanders may designate any operational flying position FAC 1 consistent with mission requirements and resource constraints.

FLIGHT ACTIVITY CATEGORY 2

2-17. FAC 2 duty positions (platoon sergeants, first sergeants, and company level staff positions) require the same level of proficiency in individual and crew tasks as FAC 1 duty positions, but less in mission tasks. FAC 2 crewmembers' mission task proficiency should be at a level sufficient to minimize training up to the FAC 1 level. Commanders must judiciously select FAC 2 mission and additional tasks to ensure maximum readiness within resource constraints. Commanders will not expect FAC 2 crewmembers to be immediately available to perform collective mission tasks that are not part of their training program. All UACs assigned to TOE units will be designated at least FAC 2.

FLIGHT ACTIVITY CATEGORY 3

2-18. Brigade commanders may designate certain positions as FAC 3 based on METL requirements. Operators assigned to FAC 3 operational UAS positions must be qualified in the primary UA. However,

FAC 3 operators are prohibited from performing crewmember duties with Army UASs. They do not have currency requirements, and they are not subject to RLs. Commanders would not use the operators in combat operations without providing refresher or mission training. To designate a position as FAC 3, a flight simulator must be available for the crewmember's use. A crewmember in a FAC 3 position must be qualified in the UA for which the flight simulator was developed. Simulator requirements for FAC 3 operators should not be waived based on the following:

- FAC 3 operators must maintain the flight simulator flying-hour minimums stated in appendix A. The commander will specify flight simulator task and iteration requirements on DA Form 7120-R. The commander may prorate these requirements IAW this publication.
- Within 90 days after being assigned FAC 3 and once annually thereafter, operators must demonstrate to an IO their proficiency in base flying tasks listed in appendix A. TOE units are not authorized FAC 3 positions for 15Ws. FAC 3 designation may only be applied in TDA units and to positions in brigade-level and above TOE units.
- Operators designated FAC 3 must maintain a current flight physical IAW AR 40-501.
- Operators designated FAC 3 will perform all of their training in the flight simulator designated by the commander. FAC 3 operators must complete the following requirements:
- A minimum of one iteration of each task listed in appendix A.
- Annual operator's written examination.
- Annual ACT-E sustainment module for their primary UA.
- Gunnery tables accomplished IAW TC 3-04.45 and this TC.

OPERATIONAL AND NONOPERATIONAL FLYING POSITIONS

2-19. Flying duty positions are further divided into operational and nonoperational positions. All operators assigned to an operational flying position must be integrated into an ATP. Operators assigned to nonoperational or any other non-flying duty positions (non-UAS units) are not required to be integrated into an ATP, but may have other requirements such as medical. Additionally, operators assigned to nonoperational or any other non-flying duty position are prohibited from performing crewmember duties (AR 95-23).

2-20. Commanders must check the credentials of any operator not assigned to their unit's ATP, but flying with their unit. When an operator flies with a unit for anything other than an authorized demonstration flight, the operator must not be otherwise prohibited from performing crewmember duties and must be considered as part of the UAC inventory.

2-21. All operators in UAS service, whether or not assigned to flying duty positions, must meet the appropriate class of medical fitness standards IAW AR 40-501, and be issued a medical clearance on DA Form 4186 (Medical Recommendation for Flying Duty).

2-22. All operators must receive an annual DA Form 759 closeout (FM 3-04.300). When assigned to locations without ATP support, local commands must develop procedures to ensure IATFs and DA Form 759s are managed and annual requirements are completed.

COMMANDER'S EVALUATION

2-23. The commander's evaluation determines the proficiency and initial RL of newly assigned crewmembers. This evaluation consists of a records review and possibly a proficiency flight evaluation (PFE). The evaluation results in an initial RL designation as follows:

- **Active Army.** The commander or designated representative will complete the evaluation within 45 calendar days after the crewmember signs in to the unit or after the effective date of the crewmember's flying status orders, whichever occurs last.
- **Reserve component.** The commander or designated representative must complete the evaluation within 45 calendar days after the effective date of the crewmember's operational flying status orders or the effective date of transfer.

RECORDS REVIEW

2-24. The crewmember is required to turn in the IATF and the IFRF IAW AR 95-23. Unit commanders or their designated representative will review the crewmember's IATF and IFRF. Unit commanders or their designated representative will compare the individual's qualifications and tasks performed in crewmember's previous assignment with the tasks required by the assigned duty position. If the appropriate RL can be determined from the review, the commander will document the RL on the individual's DA Form 7122-R.

PROFICIENCY FLIGHT EVALUATION

2-25. If the initial RL cannot be determined by the records review or if the commander desires, the crewmember will undergo a proficiency flight evaluation. At a minimum, the proficiency flight evaluation (PFE) will include base and mission tasks designated by the commander in the unit ATP SOP. The results of the PFE will determine the crewmember's RL. The commander will document the RL on the individual's DA Form 7122-R. The local area orientation (LAO) flights may be completed during the PFE. LAOs being completed in conjunction with PFEs may not be completed in a flight simulator.

CONSIDERATIONS

2-26. To be designated RL 1, based solely on a records review, a crewmember must have satisfactorily completed all APART requirements within the previous ATP year, a current DA Form 4186 (Medical Recommendation For Flying Duty), a LAO, and met ACT-E requirements.

- Commanders may not assign an initial RL 2 or RL 1 to graduates of a UAS qualification course, who are on their first utilization tour, based solely on a records review. For initial designations other than RL 3, the commander must also consider the results of a PFE.
- If at the time of initial RL designation, 1 year has passed since the UAC has completed any element of an APART (standardization flight evaluation or UAS operator's manual examination), but the crewmember has flown within the preceding 180 days, the UAC must complete that element before designation as or progression to RL 1. If crewmembers **do not** complete the element satisfactorily, they will be designated RL 3 until those tasks required for that evaluation are completed satisfactorily. Graduates of a UAS qualification course that are on their first utilization tour are exempt from this requirement.
- A crewmember that has not flown within the previous 180 days must be designated RL 3 for individual/refresher training.

2-27. A crewmember, previously designated as an RL 1 crewmember may be designated RL 1 based solely on a records check when reassigned to a similar type battalion or brigade (METL, CTL, or ATP) upon completing the LAO. ARNG crewmembers that transfer between units or support facilities within the same state can retain their previously designated RL status if they will be participating in flight activities in the same type of UA in their new assignment.

REQUIRED TRAINING

2-28. After determining the initial RL, the commander will direct qualification, refresher, mission, or continuation training for the crewmember as applicable. Time allotted for completing the required training will start accruing on the date of the RL designation. If recommended by the evaluator, crewmembers may credit the tasks satisfactorily completed on the PFE toward completion of their RL training requirements.

AIRCREW TRAINING PROGRAM PROGRESSION

2-29. Aviation commanders use a series of RLs (training gates) to track implementation and accomplishment of the Army's crawl, walk, and run training methodology. RL training develops individual and crew proficiency in tasks that support collective tasks. RL 1 crewmembers train to sustain and improve collective task proficiency. RLs identify the training phase in which crewmembers are participating and measure crewmember readiness. Commanders evaluate each duty position to determine how it can best support the unit's METL. The commander develops CTLs of base, mission and additional tasks to include

the tasks in each flight mode required to accomplish the unit's mission. Commanders also specify annual flying-hour and simulation device requirements IAW appendix A. The use of simulation is critical in the development and integration of the Army "crawl-walk-run" methodology of training its formations.

2-30. The CTL is a commander's directive to the crewmember that mandates specific training and evaluation requirements. The CTL requirements are battle-focused, task-based requirements derived from the unit's METL, UTL and appendix A. Task-based aviation CATS assist the commander in the development of individual CTLs. The CTL designates authorized crew duty stations and specifies the hours, tasks, iterations, frequency, evaluation requirements, and ATP responsibilities the crewmember must meet during the training year.

2-31. AR 95-23 establishes procedures, policy, and responsibilities for crewmember training, standardization requirements, management of aviation resources, and the ATP. Chapters 2 through 4 provide specific guidance on implementing the commander's ATP.

2-32. Crewmembers must have a current DA Form 4186 (or equivalent IAW AR 40-501) authorizing performance of aviation duties signed by the commander.

READINESS LEVELS

2-33. RL training begins with the development of proficiency at the individual level and progresses through crew to collective proficiency. RLs identify the training phase in which the operator is participating and measure readiness to perform assigned missions. RLs also provide a logical progression of individual and crew training based on task and mission proficiency. Tasks required for crewmembers to progress from RL 3 to RL 1 are the base 1000-series tasks established by this TC and the mission (2000-series), additional (3000-series) and maintenance (4000-series) tasks (if applicable) listed on the individual's CTL. The CTL requirements are battle-focused, task-based requirements derived from the unit's METL.

> *Note.* RLs *not* applicable to FAC 3 UACs, GCMs, ground observers, or WOs that hold a United States Army occupational specialty of 150U and/or officers holding a United States Army aeronautical rating that have not completed the HQDA approved UAS qualification course and are performing payload operator duties on a limited basis.
>
> *Note.* RLs are *not* applicable to DACs.
>
> *Note.* Unless otherwise designated by the commander, the only ATP requirement of an RL 3 or RL 2 UAC is to progress to the next higher RL within the time prescribed in chapter 2. **Progression:** Active Army UACs, USAR technicians, and USAR active Guard and Reserve UACs have 90 consecutive days to progress from one RL to the next. USAR and ARNG crewmembers have 1 year to progress from one RL to the next. RL progression will exclude days lost because of—

- Temporary duty (TDY) or deployment to a location where the UAC is unable to operate UAS.
- Medical or nonmedical suspension from operations.
- Leave approved by the unit commander.
- Grounding of UAS by Headquarters, Department of the Army.
- UASs that are unavailable or in transit due to unit deployment/redeployment UA preset/reset.
- Documented flight cancellations due to weather and/or maintenance that have had a significant impact on flight operations, as well as restrictions to flight operations due to no fly times from the host country in which the unit operates.

2-34. If the exclusion period exceeds 45 consecutive days, operators must restart the current phase of RL progression. Operators will restart on that date and have 90 consecutive days to progress to the next RL. If the exclusion period exceeds 90 days for those ARNG and USAR crewmembers, which have 1 year to progress, restart the current phase of RL progression.

2-35. An operator may progress to the next RL in less time than prescribed above by demonstrating proficiency to an SO/IO.

2-36. During RL progression, crewmembers must demonstrate proficiency as required by appendix A and CTL for each task. When progressing from RL 3 to RL 1, all RL designations (RL 3, 2 and 1) will be annotated separately on DA Form 7122-R.

2-37. When a crewmember is reclassified to RL 2 or RL 3 because of a flight deficiency, the crewmember needs to demonstrate proficiency in only the tasks that were graded unsatisfactory.

2-38. When an operator has not progressed within the required period, the unit commander will take action IAW AR 95-23.

READINESS LEVEL 3

2-39. An operator is RL 3 while undergoing qualification or refresher training. Refresher training is for an operator to regain proficiency in academics and all base tasks for the duty position. An operator progresses from RL 3 to RL 2 by demonstrating proficiency in all base tasks from appendix A to an SO/IO. RL 3 crewmembers are only authorized to perform actual flight with an SO/IO based on the following criteria:

- A crewmember returning to an operational flying position after not having flown flight simulator or UA within the previous 180 days must be designated RL 3 for refresher training. Refresher training should include academic courses. The crewmember will receive training and demonstrate a working knowledge of the applicable topics in phase 2 of the evaluation sequence section of this TC and complete the operator's written examination.
- There are no task or iteration minimums or APART requirements while an operator is designated RL 3. However, to smoothly transition from RL 3 to RL 2, the commander may establish minimum hours and iterations with assistance from the SO/IO.
- The SO/IO who conducted/completed the training will enter name, rank, and duty position for any RL progression training entries on DA Form 7122-R.
- Crewmembers must have a current DA Form 4186 signed by the commander before starting flight tasks.
- Maximum use of flight simulators is encouraged.

2-40. UACs can be designated RL 3 for progression or deficiency. Each refresher training program is designed to attain proficiency in base tasks:

- **RL 3 accomplished for qualification and/or refresher.** Qualification and/or refresher training is used during integration into the unit ATP following the commander's evaluation. All base tasks will be trained and evaluated IAW this TC. Upon completion of the training, UACs are designated RL 2 for mission training.
- **RL 3 progression deficiency.** Refresher training used after an evaluation indicates a UAC deficiency in base task(s). Only those tasks found deficient are required to be trained and evaluated in which the failure occurred. Upon completion of the training, crewmembers are normally re-designated RL 1. If mission tasks were also found deficient, progress the UAC to RL 2 for deficiency.

2-41. During RL 3 progression—

- Specific requirements, tasks, and flight modes in appendix A must be completed.
- Crewmembers progress from RL 3 to RL 2 by demonstrating proficiency in all base tasks from appendix A and appropriate academic subject area to an SO/IO.
- When crewmembers fail to progress to RL 2, commanders must investigate, determine the reason, and take appropriate action IAW AR 95-23.
- Crewmembers serving in their first utilization tour must complete the appropriate gunnery tables IAW TC 3-04.45. If upon records review it is determined that an assigned crewmember has not met the annual gunnery requirements, the commander may require the crewmember to fire the appropriate tables based on individual operators level of experience and time passed since last qualification.

2-42. Commanders may reduce a UAC to RL 3 status for mitigating circumstances, such as lengthy illness, TDY, or failure to maintain proficiency. Commanders are authorized to suspend operators 60 days for a nonmedical suspension. Commanders should consider removal from flight status and military occupational

specialty (MOS) reclassification or separation for crewmembers who demonstrate a pattern of failure to maintain currency or proficiency.

2-43. Crewmembers designated RL 3 will not perform any mission (2000-series), additional (3000-series), or maintenance (4000-series) tasks until progression to RL 2.

2-44. **Aircraft refresher training.** When designated RL 3, crewmembers will receive refresher training in the crew station(s) in which they are authorized to perform crew duties (table 2-1).

2-45. **Academic training.** The crewmember will receive training and demonstrate a working knowledge of the applicable subject areas and topics in phase 2 of the evaluation sequence and complete the operator's written examination.

2-46. **Flight training.** The crewmember will receive training and demonstrate proficiency from either crew station in each base task marked with an "**X**" (mandatory annual task iteration requirement) of table A-1, page A-2. The crewmember will complete gunnery tables IAW TC 3-04.45. Crewmembers must demonstrate proficiency in required base tasks and be designated RL 2 prior to undergoing mission training.

Table 2-1. Refresher academic guide

Introduction	Landing gear (retractable)
DOD flight information pubs and maps	Engines and related systems
Crew coordination	Propellers
Standing operating procedure requirements	Fuel system
Map reading (military and civilian)	Navigation equipment
Visual flight rule minimums, procedures and maps	Electrical system
Weight and balance requirements	Environmental system
Forms	Anti-ice/de-ice (as applicable)
Publications required for operating the unmanned aircraft	Performance charts
Instrument planning and procedures (as applicable)	Sensors (such as STARLite payload, common sensor payload)
Operating limitations and restrictions	Aeromedical factors
Aircraft emergency procedures and malfunction analysis	Aerodynamics

READINESS LEVEL 2

2-47. An operator that has completed RL 3 training or has been initially designated RL 2, based on the commander's evaluation, will begin training on mission and additional tasks as designated by the unit commander. Mission training programs help RL 2 operators to develop their ability to perform specific tasks (selected by the commander) that support the unit's METL. Because the goal is proficiency in mission-related tasks, commanders should tailor their task list to meet specific unit needs. An operator progresses from RL 2 to RL 1 by demonstrating proficiency in all selected mission and additional tasks, applicable academic subjects, and in each flight mode specified on the DA Form 7120-1-R (Crew Member Task Performance and Evaluation Requirements) to an SO/IO. An operator has 90 consecutive days (ARNG and USAR crewmembers have 1 year) to progress to RL 1. There are no task or iteration minimums or APART requirements while an operator is designated RL 2. However, to smoothly transition from RL 2 to RL 1, the commander may establish minimum hours and iterations with assistance from the SO/IO. RL 2 crewmembers are only authorized to perform actual flights with an AC/UT/SO/IO as described below:

- Local directives and SOPs may add tasks to be trained in addition to appendix A's flight tasks. Any additional training/evaluation tasks must be annotated on the crewmember's CTL.
- All crewmembers must complete a LAO flight before progressing to RL 1.

- Academic mission training. The topics in table 2-2, may be used as a guide to develop an academic mission-training program. The commander should tailor mission academic training to fit the specific needs of the unit's mission and METL.
- Commanders may authorize RL 2 UACs to fly with an AC and perform all tasks previously evaluated as "**S**" (satisfactory) by an SO/IO.
- RL 2 crewmembers may train with a UT for mission training, but must be evaluated by an SO/IO before designation to RL 1.
- When crewmembers fail to progress from RL 2 within 90 days, the commander must investigate, determine the reason, and take appropriate action IAW AR 95-23.

Table 2-2. Academic mission training guide

Aircrew training program requirements	Fire support/call for fire
Individual aircrew training folder and individual flight record folder (IATF/IFRF)	Downed unmanned aircraft procedures
Mission statement and employment methods	Mission equipment
Terrain analysis	Tactical airspace coordination
Navigational chart, map, and tactical overlay interpretation	LASER operations
Battlefield environment	LASER performance detractors
Fratricide prevention	Levels of interoperability (LOI)
Tactical reports	Cooperative engagements

READINESS LEVEL 1

2-48. An operator who has completed RL 2 training is considered mission ready and designated RL 1. The operator must perform those tasks designated by the unit commander for the operator's TOE or TDA position. Once designated RL 1, the UAC must complete APART requirements during the three-month period ending the last day of the UACs birth month. A UAC is fully qualified and proficient in base, ATP required mission and additional tasks, and all applicable academics. UACs are responsible for maintaining proficiency in those tasks. RL 1 crewmembers sustain and improve proficiency in these tasks as they accomplish the continuation training requirements established in the appropriate appendix.

2-49. Crewmembers designated RL 1 must complete the following ATP requirements as established by the commander and listed on the CTL:

- Semi-annual and annual task iterations designated by the commander on the CTL.
- Semi-annual flying-hour minimums designated by the commander on the CTL.
- Annual standardization flight evaluation.
- Annual operator's written examination.
- Annual ACT-E sustainment module for their primary UA.
- All other requirements designated by the commander to be completed as part of the ATP such as chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) training, high-intensity radio transmission area (HIRTA) training, and so forth.

Note. Crewmembers will be processed IAW AR 95-23 for failure to meet any of the above ATP requirements.

Note. Crewmembers may receive credit for ACT-E sustainment training, operator's manual examination, and APART tasks/evaluations completed during RL progression training if they were evaluated as satisfactory (S) within their corresponding three-month annual evaluation window. Additional, commander-designated ATP requirements met prior to RL 1 designation may be credited at the discretion of the commander.

2-50. **Academic continuation training.** Units must develop a viable academic training program to reinforce crewmember aviation skills and knowledge to attain and sustain technical and tactical proficiency. Academic training may be conducted in any suitable environment (for example, a classroom, hangar, flight line, or field site). Academic training may be oral instruction, written instruction, computer-based training, or distance learning and may be conducted either individually or in groups. Topics listed in chapter 3 should be considered in the development of the unit's academic training program. Instructors should take advantage of commercial, Federal Aviation Administration (FAA) publications and websites to find relevant topics to share during academic training sessions.

2-51. Removal from RL 1 is based on the following criteria:

- Training deficiency. A crewmember removed from RL 1 for a training deficiency and redesignated RL 2 or RL 3 must still meet all RL 1 ATP requirements including flying-hour requirements. ATP requirements met while RL 2 and RL 3 will be applied to RL 1 requirements. To be redesignated RL 1, those crewmembers must demonstrate proficiency in only those tasks graded unsatisfactory to an SO/IO. Removal from RL 1 will be documented on the UAC's DA Form 7122-R and **must** be signed by the commander.

Note. When crewmember's RL is downgraded due to a training deficiency, the crewmember has 90 days to complete the required training.

- Regressing crew members. Crewmembers failing to demonstrate proficiency in any base tasks during any evaluation will be designated RL 3. The commander will establish a crewmember training plan for the crewmember. The crewmember who is found to be below standard must be trained and subsequently demonstrate proficiency in the base task(s) determined to be below standard to an SO/IO, as appropriate, before being reinstated to the appropriate RL status. A crewmember regressed to RL 3 must meet existing flying hour and task iteration requirements.
  - **Academic training.** After any unsatisfactory evaluation, the commander will establish academic requirements applicable to the base task(s) that were evaluated as unsatisfactory. The crew member will receive training and demonstrate a working knowledge of these topics to an IO.
  - **Flight training.** The commander will determine the task(s) to be trained as part of the crew member's training plan. As a minimum, the crew member must receive training and demonstrate proficiency in only the task(s) evaluated as unsatisfactory. The commander may establish additional task(s) for training and evaluation as part of the crew member's training plan.
  - **Other than a training deficiency**. A crewmember has until the end of the training period to complete ATP requirements. If a crewmember is removed from RL 1 for other than a training deficiency before the end of the training period (for example, a permanent change of station [PCS] departure), the ATP requirements no longer apply.

DEPARTMENT OF THE ARMY CIVILIANS, UNITED STATES ARMY RESERVE MILITARY, AND ARMY NATIONAL GUARD TECHNICIANS

2-52. DACs, USAR, and ARNG technicians must comply with appendix A for the annual standardization flight evaluation. DAC operators instructing USAACE-approved program of instructions must accomplish all UAS APART requirements specified in appendix A. The flight evaluations are conducted during a designated quarter and include only those tasks necessary to meet the requirements in the individual's job description. Flight evaluation(s) for alternate or additional UA need not be conducted during the same APART period as the primary UA. In addition, USAR and ARNG technicians must—

- Satisfactorily complete the annual hands-on performance test components of the APART and the operator's manual examination by the end of the APART period.
- Comply with all requirements of this TC for UA designated by their military commander or designated representative.

COMMANDER'S CERTIFICATION

2-53. The commander's certification is the final cross check to ensure that an individual's ATP requirements have been met. ATP commanders must annually certify each crewmember's DA Form 759. The commander will annotate whether the crewmember has or has not completed individual ATP requirements or qualifications. If a crewmember did not complete the requirements, the commander must include the reason. (The appropriate remarks are in FM 3-04.300.) If requirements were not met in the primary, additional, or alternate UA, commanders will investigate IAW AR 95-23, take action, and ensure events are posted to the DA Form 7122-R and DA Form 759 during the annual closeout. Investigations may result in removal from flying duty, extension, waiver, suspension or MOS reclassification.

EXTENSIONS, WAIVERS, AND SUSPENSIONS

EXTENSIONS

2-54. Extensions will be IAW AR 95-23 and entered on DA Form 7122-R and DA Form 759, as appropriate. Extensions will specify all requirements on the DA Form 7122-R and be signed by the appropriate authority. When the extended requirements have been completed, an entry on the DA Form 7122-R is required. If an extension exceeds the close out date, it will be annotated on the DA Form 759. Once the extended requirements have been completed, an entry is required on DA Form 7122-R and DA Form 759 during the next closeout.

WAIVERS

2-55. Waivers will be IAW AR 95-23 and annotated on DA Form 7122-R and DA Form 759 during the annual closeout. Waivers will specify all waived requirements on the DA Form 7122-R and be signed by the appropriate waiver authority. Waivers in memorandum format **do not** require an additional signature on the DA Form 7122-R; however, the waiver will specify the waiver authority and specify all waived requirements. Waivers will be retained in the miscellaneous section of the IATF until annotated on the DA Form 759 during the next closeout.

SUSPENSIONS

2-56. Suspensions and removal for UACs will be IAW AR 95-23 and AR 40-501.

- **Medical suspension**. Prescribed by AR 95-23 and AR 40-501. Medical suspensions will also be annotated on the DA Form 7122-R and DA Form 759.
- **Nonmedical suspension**. The ATP commander may impose a nonmedical suspension NTE 60 days and will be annotated on DA Form 7122-R and DA Form 759.

Note. UAC Suspensions for disciplinary, medical, administrative, or performance will be processed IAW AR 95-23 and annotated on DA Form 7122-R and DA Form 759.

AIRCREW TRAINING PROGRAM FORMS AND RECORDS

2-57. The ATP records system provides commanders with a comprehensive performance record on each crewmember in their unit. Examples of completed ATP forms with instructions are provided in chapter 5.

INDIVIDUAL AIRCREW TRAINING FOLDER

2-58. Commanders will ensure that an IATF is prepared and maintained for each operator performing flight duties, whether assigned or attached to their unit.

DEPARTMENT OF THE ARMY FORM 7120-R SERIES

2-59. Commanders will use DA Form 7120-R, DA Form 7120-1-R (Crew Member Task Performance and Evaluation Requirements), DA Form 7120-2-R (Crew Member Task Performance and Evaluation

Requirements Continuation Sheet), and DA Form 7120-3-R (Crew Member Task Performance and Evaluation Requirements Remarks and Certification) to inform crewmembers of all ATP requirements. The CTL is a working document. A separate DA Form 7120-R series is required for additional, alternate and UA not defined as similar by this TC in which the crewmember performs duties.

2-60. All RL 1 base tasks (and maintenance tasks for personnel designated to perform maintenance functions and duties on DA Form 7120-R) are as outlined in appendix A. Operators are prohibited from performing any other tasks or maneuvers not listed on their CTL, unless authorized by their commander. At a minimum, commanders should use the following authorization criteria:

- Consider crew qualifications and experience.
- Perform a risk assessment.
- Weigh risk versus the reward.
- Decide whether other support is required.
- Brief crew on DA Form 5484 (Mission Schedule/Brief).

DEPARTMENT OF THE ARMY FORM 7120-R

2-61. Only those UA (or UA not defined as similar by appendix A) in which a crewmember is qualified and expected to perform duties will be listed on DA Form 7120-R.

2-62. DA Form 7120-R is used to designate crewmember authorized flight duties/stations and semi-annual UA and simulation device flying-hour and evaluation requirements for crewmembers.

2-63. The commander signs and dates the form authorizing the crewmember to perform flight duties at the indicated crew stations prior to the crewmember's first flight. The crewmember will sign and date the CTL to certify he or she has been briefed on and understands the ATP requirements prior to the first flight. Upon initial RL 1 designation, the crewmember will be briefed on task iteration, flying-hour minimums, evaluation requirements and all other requirements incurred by this designation. UACs are not authorized to perform duties unless a DA Form 7120-R, signed by the UAC and the ATP commander, is present in their IATF.

DEPARTMENT OF THE ARMY FORMS 7120-1-R AND 7120-2-R

2-64. Commanders use DA Form 7120-1-R to list task performance and evaluation requirements. Other commander designated ATP iteration requirements may also be listed, such as collective training tasks, flight simulator scenarios, STXs. DA Form 7120-2-R is a continuation of DA Form 7120-1-R, if additional space is required.

DEPARTMENT OF THE ARMY FORM 7120-3-R

2-65. DA Form 7120-3-R records all remaining ATP requirements not listed elsewhere on the CTL and any additional information relating to the crewmember's ATP. The crewmember will certify completion of all ATP requirements no later than (NLT) the last day of their birth month.

DEPARTMENT OF THE ARMY FORM 7122-R

2-66. DA Form 7122-R is a permanent record of significant events in an individual crewmember's aviation career. Because of the permanent nature of this document, exercise care when making entries. When the crewmember leaves the unit, forward all DA Forms 7122-R with the IATF. The losing unit will retain a photocopy of the DA Forms 7122-R for a period of 1 year after the crewmember departs.

DEPARTMENT OF THE ARMY FORM 4507-R

2-67. Use this form, along with DA Form 4507-1-R (Maneuver/Procedure Grade Slip) and DA Form 4507-2-R (Continuation Comment Slip) for training programs or evaluations that requires a series of flights. Uses may include, but are not limited to qualification, refresher, and AC evaluations. DA Form 4507-R series forms will be retained in the IATF until the completion of the training and a summary of the event is entered on the DA Form 7122-R.

FLYING-HOUR REQUIREMENTS

MINIMUM HOURS

2-68. The minimum hours required for a crewmember's primary UA requirements are in appendix A. **Do not** confuse the minimum hours indicated in the TC as the definitive factor for determining aircrew proficiency. The flying-hour requirements are the minimum hours a crewmember will fly during continuation training. Prolonged periods of flight inactivity may reduce a crewmember's proficiency, even if the total minimum hour requirement is met.

FLYING-HOUR/SIMULATION REPROGRAMMING

2-69. Commanders may adjust flying-hour minimums during the crewmember's first semi-annual period, but not after the crewmember completes the first semi-annual period. When commanders exercise the option to adjust, they must clearly annotate the new semi-annual minimums on the crewmember's task list. Commanders also must make the appropriate entries in the remarks section of the crewmember's DA Form 759. Adjusting minimums helps a commander manage flying hours to meet training and mission requirements. For example, if the commander knows a UAC will be partially unavailable in one semi-annual period, the commander could allow that crewmembers to fly up to 65 percent of the annual flight hours required in one semi-annual period and 35 percent in the other. If the minimums for the first semi-annual period were designated as 35 percent and the flying hours exceeded 35 percent, the commander may reduce the second period by the excess amount so that the annual flying-hour requirement is not greater than required. However, the minimums for the second period may not be less than 35 percent of the annual requirement.

FLYING HOUR/SIMULATOR MINIMUMS PRORATING

2-70. The minimum will be one-sixth of semi-annual requirements and/or one-twelfth of annual requirements for each full month remaining in the training period. Any previous flying-hour requirement no longer applies. Commanders prorate flying-hour/flight simulator minimums when an UAC—

- Is newly designated RL 1.
- Has the primary UAS re-designated.
- Changes duty position, which involves a change in the FAC level.

OTHER PRORATING ADJUSTMENTS

2-71. Reduce flying-hour minimums by 1 month for each 30-day period that the crewmember was unable to fly. Days unable to fly, in different absence categories, may be added together for 30-day totals. Concurrent days will not be added together. For example, if a crewmember medically grounded for 30 days is sent TDY for 20 of those 30 days, only 30 days could be prorated. At the end of the training period, add the total number of days the crewmember was unable to fly the UA/flight simulator due to the following:

- TDY or deployment to a location where the crewmember is unable to fly.
- Medical or nonmedical suspension from flight.
- Grounding of UA by HQDA.
- Leave approved by the commander (Reserve Component-authorized absences by the commander).
- Aircraft non-availability due to movement to deployment/ redeployment or UA preset/reset. This must be annotated on DA Form 7122-R and should coincide with the brigade commander's "start training date" required by AR 95-23.

ADDITIONAL AND ALTERNATE UNMANNED AIRCRAFT

2-72. There are no minimum flying-hour requirements for additional or alternate UA. Commanders may designate a minimum flying-hour requirement to include flight simulator, if available to meet mission requirements. The crewmember must maintain UA currency and the commander must specify flying-hour,

task iteration, and evaluation requirements based on the unit mission to ensure operators are proficient and current in all required tasks stated IAW additional or alternate UA TCs.

TASK AND ITERATION PRORATION

2-73. During the training year, all RL 1 crewmembers must complete one iteration of each task on the commander's task list. The commander may increase these requirements as training and proficiency requirements if a crewmember is initially designated RL 1 as follows:

- If more than six months remain in the crewmember's training year, the crewmember must complete one iteration of each task indicated on the commander's task list. The commander may increase the requirements.
- If less than six months remain in the crewmember's training year, the crewmember will not have task and iteration requirements unless specified by the commander.

2-74. If the crewmember is removed from RL 1, the provisions stated under heading Readiness Level 1in this chapter apply.

LOCAL AREA ORIENTATION

2-75. LAO is an important part of the training program for newly assigned UACs. It is divided into four general areas: aircrew information reading files (AIRFs), airfield operations and procedures, airfield layout and facilities, and LAO flight. Upon completion, the LAO will be recorded as an event on DA Form 7122-R and will include the hours flown during the LAO flight. (This is not duty or seat specific.)

AIRFIELD OPERATIONS AND PROCEDURES

2-76. The commander will ensure that crewmembers are given a tour of and a briefing on the airfield operations facilities. The tour should include the flight planning room (location of maps and other flight planning aids) and airfield operations office. If the weather facility is located on the airfield, it also should be part of the tour.

2-77. The briefing should include the following:

- Certificate of authorization requirements.
- Notices to airmen (NOTAMs).
- Obtaining maps and charts procedures.
- Ensuring operations security of the airfield procedures.
- Obtaining weather information procedures.
- Obtaining range and restricted-area information procedures.
- Information on local aeromedical facilities and phone numbers.
- A review of visual flight rules (VFR) requirements for the airfield and local area.
- A review of airspace in the local area.
- A review of the local area map to include the following:
  - Boundaries.
  - Flight corridors.
  - Reporting points.
  - Noise abatement procedures.
  - Prominent terrain features and visual navigation aids.
  - Maintenance functional check flight areas.
  - Obstacles or hazards to flight.
  - Tactical training and range areas.
  - Restricted, no-look, no-fly, or no-look/no-fly areas.
  - Airfields, helipads, and frequently used landing zones.
  - HIRTA areas.

■ A review of lost-link procedures and ditch points.

AIRFIELD LAYOUT AND FACILITIES

2-78. The commander will ensure that crewmembers are given a tour of the airfield area to include—
- Petroleum, oils and lubricant facilities.
- Crash rescue facilities.
- Air traffic control (ATC) facilities.
- Simulation and procedural training devices.

LOCAL AREA ORIENTATION FLIGHT

2-79. Before progressing to RL 1, crewmembers must receive a LAO flight. (Units may conduct this flight along with other training.) The commander will determine which orientation items are required for the flight and whether it should be accomplished both day and night. The LAO flight cannot be conducted in a flight simulator. UACs may receive credit for the LAO while in a GCS and not physically at a set of controls. Items specific to the local area or those that cannot be adequately covered during the ground portion will be identified, demonstrated, or discussed during the flight. The orientation flight should include familiarization with local—
- Boundaries.
- Flight corridors.
- Reporting points.
- Prominent terrain features and visual navigation aids.
- Noise abatement procedures.
- Maintenance functional check flight areas.
- Restricted areas and no-fly areas.
- Tactical training and range areas.
- Airfields, helipads, and frequently used landing zones/drop zones.
- Obstacles or hazards to flight.
- Ditch points.

Note. Army commands, particularly those operating near sensitive borders, may establish additional requirements or restrictions for LAO.

AIRCREW INFORMATION READING FILES

2-80. UAS units will establish an AIRF. The AIRF should be divided into general and specific functional areas. It should contain reference material on UAS standardization, safety, and armament (if applicable) as well as regulations, directives, SOPs, and other appropriate publications. Units will post information as received. Pertinent new information should be maintained in the front section of each general and specific file area until the information expires or is permanently incorporated into the AIRF or the SOP.

ENVIRONMENTAL TRAINING

2-81. UAS units will have the following in their SOPs:
- Explain the effects of the environment on the unit's flight operations.
- Establish a comprehensive academic and flight training program that develops and sustains crewmember proficiency in that environment.
- For RL 1 operators, ensure that the training has been satisfactorily completed before the crewmember performs flight operations in the unique environment as described in FM 3-04.203.

COMBAT IDENTIFICATION TRAINING

2-82. Commanders of TOE units will establish a combat identification training (CID) training program in the ATP portion of the unit SOP using TC 3-17 as a reference. The CID process has the following four key purposes:

- Identify and classify objects in the operational environment as friend, enemy or neutral entities.
- Achieve fires effects on enemy targets in a timely manner.
- Increase combat effectiveness by focusing combat power on threat elements.
- Minimize/eliminate fratricide and collateral damage.

2-83. The CID program will include training on the CID process and its primary components: accurate situational awareness, positive target identification, and properly applying the rules of engagement. Combat identification is an essential part of all UAS actions on the battlefield. Joint combat identification is the process of attaining an accurate characterization of detected objects in the operational environment to the extent that high confidence, timely application of military options and weapons resources can occur. This encompasses the entire spectrum of operations on the battlefield from attack/reconnaissance to life/cargo missions, force protection, and fratricide prevention. Because airborne platforms are a major contributor to situational awareness on the battlefield, aircrews must be capable of making an accurate combat identification of friendly, threat, and relevant civilian vehicles.

2-84. All TOE UAS units will use the recognition of combat vehicles (ROC–V) software (available at: https://rocv.army.mil) to train combat vehicle identification. Commanders will establish the following in the ATP CID section of the unit SOP:

- ROC–V as the minimum training standard for visual and thermal imagery.
- Any additional threat, friendly, and civilian vehicles relevant to the current theater.
- The minimum standard for evaluation.
- Annual training requirements as a minimum.

2-85. ROC–V annual requirements will be annotated on DA Form 7120-3-R. Additional SOP requirements designated by the commander as part of the ATP will be annotated on DA Form 7120-R series (CTL) appropriately.

> *Note.* CID training is mandatory for TOE units. It is optional, but encouraged for TDA units.

UNMANNED AIRCRAFT SYSTEMS GUNNERY

2-86. The UAS gunnery program begins with individual qualification and progresses through crew qualification to unit collective training. Commanders will use TC 3-04.45 and DA Pam 350-38 to develop a progressive and continuous UAS gunnery program. The following guidelines **do not** imply that the commander should conduct live-fire gunnery training only once a year. Live-fire gunnery training should be conducted as often as aircraft, ammunition, and range resources will allow. UAS gunnery applies to all units that operate UA with weapons systems (this includes LASER designators).

COMMANDER'S EVALUATION TABLES

2-87. Gunnery tables (GTs) IAW TC 3-04.45, crew practice course consists of those skills essential to build a solid crew coordination foundation. These skills are paramount to the safe operation of the assigned UA platform. The individual operator is not required to conduct RL progression as a crew, however if the GTs IAW TC 3-04.45 are conducted as a crew it meets the requirement of both RL progression and crew practice course. GTs are to be conducted quarterly IAW TC 3-04.45. If a records review reveals that an assigned operator has not met the annual GT IAW TC 3-04.45 requirements, the commander may require the operator to fire GTs based on the individual operator's level of experience and time passed since last qualification.

GUNNERY CONTINUATION TRAINING

FLIGHT ACTIVITY CATEGORY 1

2-88. All FAC 1 RL 1 crews must successfully complete annual gunnery requirements IAW TC 3-04.45 and DA Pam 350-38.

FLIGHT ACTIVITY CATEGORY 2

2-89. FAC 2 RL 1 operators must successfully complete live-fire gunnery IAW TC 3-04.45 and DA Pam 350-38. If resources will not allow all FAC 2 RL 1 operators to complete live fire GT, those FAC 2 RL 1 operators designated as SO/IO who are combat crewed must be prioritized to fire. If the operators cannot meet this requirement because of insufficient resources (as determined by the unit commander), operators must satisfactorily complete gunnery exercises IAW TC 3-04.45 in a compatible flight simulator.

FLIGHT ACTIVITY CATEGORY 3

2-90. GT(s) IAW TC 3-04.45 for UAS aircrews will be accomplished in a compatible flight simulator.

GUNNERY QUALIFICATION

2-91. UAS gunnery training is an integral part of a unit's training program. TC 3-04.45 provides commanders with training strategy information and guidance to develop and incorporate gunnery training to their ATP. TC 3-04.45 defines gunnery standards, required tables, and scoring criteria for virtual and live-fire gunnery events. It provides the commander with the standard for measuring the individual, crew, and collective gunnery skills of his unit. It is up to the commander to use this assessment to tailor the ATP accordingly.

2-92. The commander sustains his unit's gunnery skills by incorporating the TTP defined in TC 3-04.45 into every scheduled training event. As a result of applying the principles of TC 3-04.45, effective gunnery training is conducted every time a mission is planned and executed, a UA is run-up, and an AAR is conducted. As is the case with ground combat units, aviation units must also incorporate proficiency with UA weapons into their overall training program. To fully benefit from live gunnery tables, commanders must include flight simulator scenarios as part of their aerial gunnery skills qualification prior to live fire.

2-93. The Army goal for UAS advanced gunnery training is 85 percent of the assigned unit operators qualified IAW TC 3-04.45 within the preceding 12 months. The Army standard for aviation unit gunnery training is for 85 percent of the company's assigned aircrew to have completed GTs IAW TC 3-04.45 within the preceding 12 months. The training program outlined in TC 3-04.45 will assist in attaining this standard. This training program matches the ammunition requirements in DA Pam 350-38. Commanders must ensure deviations from the program as described in TC 3-04.45 are reported on the unit status report.

2-94. After qualification, an individual and crew are considered gunnery qualified for 12 months (until the end of the following training year for Reserve Component). To retain gunnery qualification, the individual must satisfactorily complete gunnery crew qualification annually.

QUALIFICATION AND TRAINING REQUIREMENTS OF AIRCRAFT OPERATORS DESIGNATED TO PERFORM MAINTENANCE FUNCTIONAL CHECKS

PREREQUISITES

2-95. Commanders are authorized to designate aircraft operators to perform maintenance function checks (ground/airborne). Candidates designated as aircraft operators allow to perform maintenance functions are to be selected from highly experienced operators who are current, qualified and designated RL 1 AC in the type and model of UA. The crewmember assigned to perform maintenance duties will receive training and demonstrate proficiency in all maintenance functional checks (ground/airborne) tasks according to

appropriate maintenance standards and technical manuals. Topics listed in table 2-3 may be used as a guide for developing a mission academic training program for aircraft operators designated to perform maintenance functional checks (ground/airborne).

QUALIFICATION REQUIREMENTS

2-96. Aircraft operators designated to perform maintenance functional checks will receive training conducted at the unit level. The training will be accomplished by a qualified aircraft operator designated by the commander to perform maintenance related tasks and evaluations in writing on DA Form 7120-R. The crewmember undergoing maintenance functional checks (ground/airborne) qualification training will receive academic and flight training and must demonstrate proficiency in all maintenance tasks listed in the technical manual, and appendix A of this TC. The commander must designate the operator in writing.

EVALUATION REQUIREMENTS

2-97. The aircraft operator designated to perform maintenance functional checks (ground/airborne) will be evaluated annually on performance of maintenance tasks during the APART. The commander may designate additional related maintenance tasks to be evaluated during the APART.

Table 2-3. AO maintenance designation academic training development guide

TM 1-1500-328-23	DA Pam 738-751	
Before and After Maintenance Operational Check(s) Exterior Inspections–Section II	Chapter 1 Introduction	
Maintenance Functional Check(s) (Ground/Airborne)–Section III	Chapter 2 Aircraft Logbook Forms and Records	
Maintenance Functional Check(s) (Ground/Airborne) Accomplishment and Documentation – Section III	Chapter 3 Maintenance Forms and Records	
System Related Training		
Crew Coordination	MQ–1C Unmanned Aircraft Systems	Troubleshooting Procedures

AIRCRAFT COMMANDER REQUIREMENTS FOR STANDARDIZATION INSTRUCTOR OPERATOR/INSTRUCTOR OPERATOR

2-98. All Active Army UAS operators holding an SO/IO qualification with UA assigned to their platoon or company that have been assigned for at least 180 days and have been RL 1 for at least 180 days must be an AC in their primary UA. Thereafter, UAS operators holding an SO/IO qualification must become an AC in their primary UA no later than 180 days after they progress to RL 1, after assignment to the unit, or mobilize with UA available, whichever occurs first.

2-99. The 180-day AC requirement excludes days lost due to—
- TDY or deployment to a location where the crewmember is unable to fly.
- Medical or nonmedical suspension from flight.
- Grounding of UA by HQDA.
- Leave approved by the unit commander.
- Aircraft non-availability due to movement to deployment, redeployment, and UA preset/reset (less than 50 percent of unit UA assigned are not available).
- Documented flight cancellations due to weather and/or maintenance that have had a significant impact on flight operations, as well as restrictions to flight operations due to no fly times from the host country in which the unit operates.

2-100. Brigade commanders can waive this 180-day AC requirement for operators being assigned to units for less than 12 months or for units that will not have UA available for at least 12 months. This waiver will

be in a memorandum format included in the miscellaneous section of the operator's IATF, annotated on the DA Form 759 closeout, and a copy given to the individual once signed.

2-101.   If the above requirements are not met, the commander will process the operator IAW AR 95-23.

SERIES QUALIFICATION TRAINING REQUIREMENTS

2-102.   General. Unit commanders are authorized to conduct series qualification at unit. UACs receiving the training must have attended the initial UAC qualification course for the UAS being flown. To become qualified in a UAS series, a UAC must complete—

- **Academic training**. The UAC will receive training and demonstrate a working knowledge of the applicable topics in chapter 3 and complete the operator's manual written examination.
- **Flight training**. The UAC must demonstrate proficiency to an SO/IO in all base tasks and mission tasks as designated by the commander.

ANNUAL CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR, AND HIGH-YIELD EXPLOSIVE TRAINING

2-103.   Commanders will establish a CBRNE training program in the ATP portion of the unit SOP IAW appendix A. The CBRNE training is required for all units unless waived by the appropriate authority. For units without the appropriate equipment and/or units commanders that determine they **do not** have a CBRNE training requirement, they may request a unit ATP waiver IAW AR 95-23.

MISSION-ORIENTED PROTECTIVE POSTURE

2-104.   Conducting UAS operations while in mission-oriented protective posture-4 (MOPP-4) presents special challenges. The protective over-garment and gloves restrict movement and the protective mask restricts vision. The Army is continuously upgrading MOPP gear for aircrews to alleviate these challenges. Crewmembers can overcome these restrictions by training as often as possible while wearing MOPP-4 gear. The level of proficiency training will be based on the commander's assessment of the unit's METL.

2-105.   In units with TOE allocation of equipment, the first 0-6 in the chain of command will evaluate the unit's mission and determine whether CBRNE training is required. If CBRNE training is required, all FAC 1 positions, and those FAC 2 positions designated by the commander will conduct CBRNE training as established in appendix. CBRNE iteration requirements will be annotated on DA Form 7120-1-R IAW chapter 5 of this TC.

2-106.   This training increases crewmembers' confidence in their ability to successfully accomplish their mission. It also enables commanders to see how CBRNE operations affect the unit's ability to accomplish specific missions and how these operations impact on time and personnel requirements.

2-107.   While conducting CBRNE training wearing MOPP-4, the commander will ensure that—

- Flight crews use extra caution when performing flight duties when the wet bulb globe temperature is above 75 degrees Fahrenheit. Ideally, this training should be conducted during the cooler months of the year.
- Emergency procedure training may be conducted if an IO is present and not wearing a protective mask IAW appendix A. Emergency procedure training should be performed in the flight simulator or while the UA is still on the ground.
- The CBRNE flight training outlined below may be conducted by a qualified crew, unless stated otherwise, meeting the minimum crew requirements IAW the operator's manual.

TASK REQUIREMENTS

2-108.   This publication outlines tasks that the commander must select for training. The commander also may select tasks associated with the unit's mission.

TRAINING PROFICIENCY

2-109.   The CBRNE annual requirements listed will provide aircrews with an individual familiarity of flight operations under CBRNE training environment. This training can be expanded beyond the minimums outlined in this TC as commanders desire to bring aircrews from a level of familiarity to a level of crew proficiency. The number of hours and iterations required to train each crewmember depends on the unit's mission and the commander's assessment of the unit's needs for proficiency. The commander must decide how much training is needed for proficiency in unit CBRNE operations. Once crewmembers are trained, they can maintain proficiency through collective CBRNE flight training.

TRAINING

2-110.   Crewmembers will receive CBRNE training in the tasks listed below and any additional CBRNE tasks on the CTL:

- Task 1022, Perform Exterior Inspection Procedures.
- Task 1024, Perform Engine Start/System Checks.
- Task 1034, Perform Unmanned Aircraft Taxi.
- Task 1035, Perform Automatic Take-off and Landing System Takeoff.
- Task 1086, Perform Automatic Take-off and Landing System Landing.
- Task 1802, Perform After Landing Procedures.

EVALUATIONS

2-111.   The CBRNE tasks outlined here are the minimum required tasks for annual CBRNE evaluations. The evaluation will be conducted IAW this publication. This evaluation will be documented in the crewmember's IATF. The evaluation will be conducted at any time during the ATP year and may be aligned with the APART. Units may conduct CBRNE evaluations as part of the commander's no-notice program, in conjunction with the APART, or during a STX. The CBRNE flight evaluation will be conducted on the UA or flight simulator as directed by the commander.

AEROMEDICAL TRAINING

2-112.   The commander, assisted by the flight surgeon, develops an aeromedical sustainment training program that meets the unit's specific needs. Consideration will be given to the unit's mission, area of operations, and environments that the unit may operate. Because of the medical and technical nature of the aeromedical training program, commanders should involve their supporting flight surgeon in developing the program. Commanders can obtain further assistance in developing a unit aeromedical sustainment training program from the Dean, United States Army School of Aviation Medicine, ATTN: HSHA-AVN, Fort Rucker, AL 36362. The aeromedical sustainment training program will be conducted IAW TC 3-04.93. The following website contains lesson plans and student handouts for required annual training that are available for downloading at: https://www.us.army.mil/suite/folder/7284062. Users must be logged into AKO to access this link.

MULTIPLE UNMANNED AIRCRAFT DESIGNATION

2-113.   The commander designates a primary UA for each crewmember. When a crewmember must perform duties with more than one UA, the commander designates an alternate/additional UA. Crewmembers must perform the appropriate task iteration, fly the appropriate flying hours, and complete APART requirements in the primary, and (if applicable) any additional or alternate UA IAW AR 95-23.

2-114.   **Primary UA**. The UA mission type/design (RQ-7B, MQ-5B, MQ–1C) designated by the commander or required by the TOE or TDA position to which the crewmember is assigned.

2-115.   **Series grouped UA**. UA grouped together based on complexity of the operator to UA interface (control panels/menus, payloads, control stations, and UA performance) as defined by the UA's TC for currency. Task, iteration, flying hour, and evaluation requirements will be specified in the UA's TC and included on one CTL (such as RQ-7A/RQ-7B).

2-116. **Similar UA.** UA defined as having similar operating and controlling characteristics. UA not listed within a series group but share one TC may be included on one CTL. For example: All RQ-7B variants (RQ-7B-80, RQ-7B-70, and RQ-7B-60) are similar.

2-117. **Additional UA**. UA is in the same category (fixed-wing or rotary-wing) as the primary UA, but **do not** meet similar UA requirements. Additional UA will have a separate CTL (such as MQ–1C and MQ-7B).

2-118. **Alternate UA**. UA is in the opposite category (fixed-wing or rotary-wing) of the primary UA. Alternate UA will have a separate CTL.

2-119. Commanders should consider risk versus reward when assigning similar, additional, or alternate UA to operators flying highly complex, advanced UA.

AIRCREW TRAINING MANUAL TASKS

2-120. This section describes the tasks essential for maintaining crewmember skills. It defines the task, title, number, conditions, and standards by which performance is measured. A description of crew actions, along with training and evaluation requirements, is also provided. It does not contain all the maneuvers that can be performed while operating the UA.

TASK CONTENT

TASK NUMBER

2-121.   A ten-digit TRADOC number and title identify each task. For ease of identification, the last four digits of this number are 1000/2000/3000/4000-series indicating they are base, mission, additional or maintenance tasks, respectively.

- The 1000-series tasks are base tasks. A base task is common to all UACs authorized to perform duties in a particular UA, regardless of FAC level, unit METL or duty position. Base tasks cover those baseline skills, knowledge, and procedures necessary to operate the UA and selected installed equipment.
- The 2000-series tasks are mission tasks to support the unit's METL, which the commander may select. Commanders may further tailor the selection of mission tasks to match a crewmember's duty position. Mission tasks also standardize conditions, standards, performance steps and evaluation requirements of equipment not installed on all UA of a series.
- The 3000-series tasks are additional tasks (see chapter 7 for 3000-series unit task development). These are tasks that the commander determines are essential to METL accomplishment and are not included in this TC. The commander assigns these tasks a 3000-series number and lists them separately on the CTL. When an additional task is developed by the unit, the commander must perform a risk analysis for performance of the task, and determine training required for standardization personnel to attain proficiency in the task. The additional tasks must include—
  - Task number.
  - Title of the task.
  - Conditions under which the task is performed.
  - Standards for performance of the task.
  - Description of how the task is performed.
  - Considerations for performance of the task (such as environmental, safety, and crew coordination).
  - Training/evaluation requirements.

Note. Additional tasks designated by the commander as mission essential are not included in this TC. The commander will develop conditions, standards, and descriptions for those additional tasks.

- All 4000-series tasks are maintenance tasks. These maintenance tasks cover those procedures, knowledge and skills required to perform maintenance functional checks (ground/airborne). Refer to AR 95-23 for definitions and responsibilities of the aircraft operator performing maintenance functions.

TASK TITLE

2-122.   The task title identifies a clearly defined and measurable activity.

CONDITIONS

2-123.   Tasks are performed in the situation that the conditions specify. The conditions specify the situation (normal operation, wartime, training, or evaluations) under which the task will be performed. They describe the important aspects of the performance environment. UACs must meet all conditions before receiving credit for the task iterations. Common conditions include—when a UT, IO, SO, or AO performing maintenance functional check(s) is required for the training of the task while operating the UA, that individual will be at one set of flight controls while the training is performed.

STANDARDS

2-124.   The standards describe the minimum degree of proficiency or standard of performance for accomplishing the task under ideal conditions. The terms, "without error," "properly," and "correctly" apply to all standards. Many standards are common to several tasks. Individual instructor operator techniques are not standards, nor are they used as grading elements. Unless otherwise specified in the individual task, the common standards below apply. Alternate or additional standards will be listed in individual tasks. All tasks—

- Perform crew coordination actions IAW chapter 6 and the task description.
- **Do not** exceed UA limitations.
- Utilize applicable terminology IAW ATP 1-02.1.

DESCRIPTION

2-125.   The description explains one or more recommended techniques of completing the maneuver to the standards and will allow safe accomplishment of the maneuver in most circumstances. Deviations from the task description may be acceptable provided all the standards are still met and the safety of the UA and crew is not in question. These actions apply during day, night, instrument meteorological conditions or CBRNE operations. This manual cannot address all situations and alternate procedures may be required. When specific crew actions are required, the task will be broken down into crew actions and procedures as follows:

Crew Actions

2-126.   These define the portions of a task performed by each crewmember to ensure safe, efficient, and effective task execution. The designations **A** and **P do not** refer to AC duties. When required, AC responsibilities are specified. For all flight tasks, the following responsibilities apply.

- Both crewmembers. Perform crew coordination actions and announce malfunctions or emergency conditions. Monitor engine and systems operations and avionics (navigation and communication), as necessary.
- The AC. The AC is responsible for the conduct of the mission and for operating, securing and servicing the UA they command. The AC will ensure that a crew briefing is accomplished and that the mission is performed IAW ATC instructions, regulations and SOP requirements. The AO. The AO is responsible for completing tasks as assigned by the AC.
- The A (operator on flight controls). The A will indicate the crewmember that controls and/or monitors the actual flight of the UA from within a GCS, takeoff and landing site, portable GCS or similar device. The A is responsible for UA control, obstacle avoidance, navigation, in-flight computations and the proper execution of emergency procedures. The A, when verbally being

described or referenced is called the "operator on flight controls". The A will announce any deviation from normal operating procedures and the reason. The A will announce changes in altitude, attitude, airspeed or direction.

- The P (operator on payload controls). The P will indicate the crewmember that is responsible for operation of the payload to include weapons and sensors. Operators on the payload employing weapons systems will be qualified and current IAW United States Army directives. The P is responsible for communication, weather scans, cross-check calculations for fuel and airspeed, takeoff and landing procedures, and assisting the A as necessary. When possible, the P should complete those emergency procedure steps that **do not** directly involve manipulation of controls. When present for takeoff and landing, the P should assist the A with obstacle clearance. Verbally, the P is referred to as the "operator on payload controls", depending on context.

Procedures

2-127.   Identify the preferred method of accomplishing the task. Operational procedures of equipment are normally given primarily in TM 1-1550-696-CL and amplified as necessary in accompanying paragraph when a detailed description of a procedure or maneuver is required IAW with DTM 1-1550-696-10. Provide the proper procedures including all steps and responsibilities by each occupying station necessary to ensure safe and efficient accomplishment of the task to be developed and provide any unique characteristics and reaction of the equipment being used during various phases of operation each crewmember needs to be aware including any precautions to be observed.

NIGHT CONSIDERATIONS

2-128.   Where applicable, night considerations are included.

REFERENCES

2-129.   The references are sources of information relating to that particular task. Certain references apply to many tasks. Besides the references listed with each task, the following common references apply as indicated.

- All flight tasks (tasks with engines operating).
  - Aircraft logbook.
  - Applicable operator's manual and checklist.
  - AR 95-20.
  - AR 95-23.
  - Current USAACE-approved student handouts.
  - DA Pam 738-751.
  - Department of Defense (DOD) flight information publication (FLIP).
  - Federal Aviation Regulation (FAR)/host-country regulations.
  - FM 3-04.203.
  - FM 3-04.240.
  - Unit/local SOPs.
- All tasks with environmental considerations.
  - FM 3-04.203.
  - FM 3-04.240.
- All medical tasks.
  - AR 40-8.
  - TC 3-04.93.

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Chapter 3

Evaluations and Tests

This chapter describes evaluation principles and considerations. It also contains guidelines for conducting academic and hands-on performance testing. Evaluations are a primary means of assessing standardization and crewmember proficiency. Evaluations will be conducted IAW AR 95-23 and this TC.

GENERAL

3-1.   An evaluation is a tool used to ensure crewmembers develop and maintain base, mission, and additional task proficiency to established standards. An individual's lack of proficiency may indicate a need for increased task iterations and/or frequency for that particular crewmember. While evaluations are primarily a method to assess individual proficiency, an adjustment in the ATP may be required if a sufficient number of crewmembers of a unit fail to demonstrate proficiency in a specific task or tasks.

GRADING EVALUATIONS

3-2.   Grading evaluations will be IAW appendix A. Evaluators will adhere to published standards. However, if other than ideal conditions exist, the evaluator must make allowances for those conditions during the grading of each maneuver (for example, gusty winds near the limit of UA operational limitations).

CONDUCTING EVALUATIONS

3-3.   Prior to conducting flight evaluations, evaluators will brief tasks that the crewmember being evaluated must perform.

3-4.   While conducting flight evaluations, evaluators will—
- Perform the crew duties normally assigned to other crewmembers performing the tasks and missions being evaluated.
- Perform aircrew coordination actions prescribed in appendix A.

3-5.   SOs are authorized to train and evaluate all operators as directed by the ATP commander.
IOs are authorized to train all operators and evaluate all operators except for other IOs and SOs. IOs are authorized to evaluate other IOs and SOs only when reestablishing UA currency.

3-6.   The most experienced aircraft operator performing maintenance functional check(s) in the unit is the only authorized UAC to conduct training and evaluation for all other aircraft operator performing maintenance functions.

3-7.   When a crewmember is being evaluated as an instructor/evaluator, the instructor/evaluator must include role reversal as a part of the evaluation. Role reversal is a planned situation when the instructor/evaluator assumes the role of the crewmember being evaluated, and the evaluated crewmember assumes the role of the evaluator.

Note. Role reversal may be accomplished during the oral and/or flight portion of the evaluation.

3-8.   The evaluator must clearly announce when role reversal is initiated and when it is concluded to prevent confusion and crew coordination errors while operating the UA. The AC designation does not change. This situation allows the evaluated crewmembers to demonstrate their proficiency in training and evaluating crewmembers.

Note. Evaluators will brief the use of role reversal during the crew brief to alert all crewmembers of the intent.

HANDS-ON PERFORMANCE EVALUATIONS

STANDARDIZATION FLIGHT EVALUATION

3-9.   This is an evaluation consisting of flight tasks and/or procedures conducted in each UA mission, type, design, and series group in which a crewmember is required to perform duties. Standardization flight evaluations determine the crewmember's ability to perform assigned flight duties.
The evaluation will—

- Be performed IAW AR 95-23.
- Consist of the flight evaluation described in this TC.
- Be conducted by a designated SO, or IO.
- Be conducted IAW the CTL.

PROFICIENCY FLIGHT EVALUATION

3-10.   The commander directs the proficiency flight evaluation to any UAC in an operational flying position. This evaluation will be conducted IAW AR 95-23 and this TC.

POST-MISHAP FLIGHT EVALUATION

3-11.   This evaluation is conducted IAW AR 95-23, for crewmembers involved in a Class A or B accident, or Class C accident at the discretion of the commander. Crewmembers will be suspended from flight duties until the completion of the flight evaluation. The type and nature of the evaluation will depend on the crew duties that the crewmember (SO/IO/AC/UT/AO) was performing at the time of the accident. The accident circumstances should be used to make training management decisions including task frequency, training method, and environment (live or simulation). Special emphasis will be placed on evaluating the task being performed at the time of the accident under similar conditions, if possible. After the evaluation, the SO/IO, as appropriate, will debrief the examinee and make the appropriate entries on DA Form 7122-R.

MEDICAL FLIGHT EVALUATION

3-12.   This evaluation is conducted IAW AR 95-23. The SO/IO as appropriate, on the recommendation of the flight surgeon/commander's direction, will require the examinee to perform a series of tasks most affected by the examinee's disability. The evaluation should measure the examinee's potential to perform a tasks IAW this TC despite the disability. It should not be based on current proficiency.

3-13.   After the examinee has completed the medical flight evaluation, the evaluator will document the evaluation on DA Form 7122-R and provide the results to the commander. UAC results must be forwarded to the flight surgeon for appropriate disposition.

3-14.   The flight surgeon will document the recommendation to the commander on DA Form 4186.

3-15.   The unit commander will make appropriate decisions concerning the examinee's flight duties and document them on DA Forms 4186 and 7122-R.

NO-NOTICE EVALUATION

3-16.   A comprehensive no-notice evaluation program is a valuable tool that allows commanders to monitor training effectiveness at all levels. Each commander must establish a no-notice proficiency evaluation program in the unit SOP. No-notice evaluations may be written, oral, hands-on flight evaluation in UA/compatible flight simulator, or a combination thereof. The commander will determine the number of evaluations that must be hands-on flight evaluations. This program measures the effectiveness of individual, crew, and collective training. Commanders use the results of no-notice evaluations to ensure

unit standardization and readiness and to tailor the unit's individual, crew, and collective training programs. Each crewmember will receive at least one form of no-notice evaluation per year.

ANNUAL PROFICIENCY AND READINESS TEST REQUIREMENTS

3-17. The APART is a mandatory process that measures a crewmember's individual and crew proficiency and readiness. It consists of a written examination and hands-on performance evaluation(s) that must be passed annually IAW AR-95-23 and appendix A. RL 1 crewmembers must pass all written and hands-on performance evaluations during their APART period. The APART period is the three-month period ending on the last day of the crewmember's birth month.

3-18. A crewmember designated RL 1 during the three-month APART period must complete all APART requirements. Crewmembers receive credit for the UA operator's written examination and hands-on performance tasks performed during RL progression training if they demonstrate proficiency and are evaluated satisfactory on the tasks within the three-month APART period. Those crewmembers participating in RL 3 or RL 2 training programs are not subject to the APART evaluations unless they were removed from RL 1 because of a training deficiency.

3-19. The UA operator's written examination is an open-book examination prepared at the local level and consists of 50 objective questions. The minimum passing score is 90 percent. The examination covers the entire operator's manual. Other questions may be added from the academic/oral evaluation topics stated in this TC and develop a combined written exam. Operators must complete this examination for the primary, additional, and alternate UA they are required to operate as specified by the commander.

3-20. The hands-on performance evaluation (standardization flight evaluation) consists of oral and flight evaluations as outlined in appendix A. The hands-on performance tests require evaluation of proficiency in several areas and may be separated into different flights. However, crewmembers must successfully complete all requirements during their APART period.

3-21. Personnel on orders authorized to conduct maintenance functional checks will be evaluated IAW the guidelines in this TC.

Note. Commanders may authorize operators that complete an approved course at a USAACE-approved training site during their APART period to credit those tasks that were evaluated during the end-of-stage, end-of-phase, or end-of-course evaluation toward the completion of the APART evaluation requirement.

3-22. Commanders will process crewmembers that fail to meet ATP requirements IAW AR 95-23. As such, commanders should formally counsel individuals that fail to meet ATP requirements and document on DA Form 4856 (Developmental Counseling Form).

EVALUATION PRINCIPLES

3-23. The value of any evaluation depends on strict adherence to fundamental evaluation principles. These principles are described below.

- **Selection of evaluators.** The evaluators must be selected not only for their technical qualifications, but also for their demonstrated performance, objectivity, and ability to observe and to provide constructive comments. These evaluators are the SO and IO, that assist the commander in administering the ATP.
- **Method of evaluation.** The method used to conduct the evaluation must be based on uniform and standard objectives. In addition, it must be consistent with the unit's mission and must strictly adhere to the appropriate SOPs and regulations. During the evaluation, the evaluator must refrain from making a personal "area of expertise" a dominant topic during the evaluation.
- **Participants' understanding**. All participants must completely understand the purpose of the evaluation.
- **Participants' cooperation.** All participants must cooperate in order to accomplish the evaluation objectives. The evaluation emphasis is on all participants, not just on the examinee.

- **Identification of training needs**. The evaluation must produce specific findings to identify training needs. The examinee needs to know what is being performed correctly or incorrectly, and how to make improvements.
- **Purpose of evaluation.** The evaluation will determine the examinee's ability to perform essential hands-on/academic tasks to prescribed standards. Flight evaluations also will determine the examinee's ability to exercise crew coordination in completing these tasks.
- **Crew coordination.** The guidelines for evaluating crew coordination are based on a subjective analysis of how effectively a crew performs together to accomplish a series of tasks. The evaluator must determine how effectively the examinee employs the aircrew coordination basic qualities as outlined in chapter 4.
- **Evaluator's role as crewmember.** In all phases of evaluation, the evaluator is expected to perform as an effective crewmember. However, in order for the evaluator to determine the examinee's level of proficiency, the evaluator may intentionally perform as an ineffective crewmember. In such cases, a realistic, meaningful, and planned method should be developed to pass this task back to the examinee effectively. In all other situations, the evaluator must perform as outlined in the task description or as directed by the examinee. At some point, the evaluator may perform a role reversal with the examinee. The examinee must be made aware of both the initiation and termination of role reversal. The examinee must know that they are being supported by a fully functioning crewmember.

Note. When evaluating an AC, UT, SO, or IO the evaluator must advise the examinee that during role reversal, the evaluator may deliberately perform some tasks or crew coordination outside the standards to check the examinee's diagnostic and corrective action skills.

Note. The SO will evaluate IOs and SOs during all APART and PFEs other than UA currency.

GRADING CONSIDERATIONS

ACADEMIC EVALUATION

3-24. The examinee must demonstrate a working knowledge and understanding of the appropriate subject areas.

FLIGHT EVALUATION

3-25. **Academic.** Some tasks are identified in training and evaluation requirements as tasks that may be evaluated academically. The examinee must demonstrate a working knowledge of these tasks. Evaluators may use computer-based instruction, mock-ups, or other approved devices to assist in determining the examinee's knowledge of the task.

3-26. **Actual flight or flight simulator.** Tasks, which require evaluation under actual flight or flight simulator conditions, must be performed in the UAS or with a compatible flight simulator. Task standards are based on an ideal situation. Grading is based on meeting the minimum standards. The evaluator must consider deviations (high wind, turbulence, or poor visibility, lack of equipment, and so forth) from the ideal conditions during the evaluation. If conditions are not ideal, the evaluator must make appropriate adjustments to the standards.

CREWMEMBER EVALUATIONS

3-27. Evaluations are conducted to determine the crewmembers' ability to perform the tasks on their CTL and to check their understanding of the required academic subjects listed in this TC. When the examinee is an evaluator/trainer, the recommended procedure is for the evaluator to reverse roles with the examinee. When the evaluator uses this technique, the examinee must understand how the role reversal will be conducted and when it will be in effect. Initial validation of an evaluator's qualifications at a new duty station will not be conducted solely on an academic basis.

PERFORMANCE CRITERIA

3-28. **AO.** The AO must demonstrate a working knowledge of the appropriate academic subjects listed in this TC. In addition, the AO must be familiar with their IATF and understand the requirements of their CTL.

3-29. **AC.** The AC must meet the AO requirements listed above. In addition, the AC must demonstrate technical /tactical proficiency, sound judgment, and maturity in managing the employment of the aircraft, the unit's mission, crew, and all assets regarding the operation of the UA.

> *Note.* Trainers and evaluators—SOs/IOs/UTs will be evaluated on their ability to apply the learning and teaching process outlined in the instructor pilot handbook.

3-30. **UT.** The UT must meet the AC requirements listed in this TC. In addition, the UT will be evaluated on their ability to apply the learning and teaching process outlined in the instructor pilot handbook. The UT must be able to instruct in the appropriate tasks and subjects, recognize errors in performance or understanding, make recommendations for improvement, train to standards, and document training. This individual should possess knowledge of the fundamentals of instruction and understand the requirements and administration of the ATP. The UT is not authorized to conduct evaluations.

3-31. **IO.** The IO must meet the AC requirements listed above. In addition, the IO must be able to objectively train, evaluate, and document performance of crewmembers, AOs, ACs, and UTs using role reversal as appropriate. The IO must possess a thorough knowledge of the fundamentals of instruction and evaluation, be able to develop and implement an individual training plan and must have a thorough understanding of the requirements and administration of the ATP.

3-32. **SO.** The SO must meet the AC and IO requirements listed above. The SO must be able to instruct and evaluate SOs, IOs, ACs, and UTs, as appropriate, using role reversal. The SO must also develop and implement a unit-training plan and administer the commander's ATP.

3-33. **MC.** The MC must pass a semi-annual written exam and participate in the unit no-notice program. In addition, the MC must demonstrate sound judgment and maturity in managing the mission, crew, and assets.

3-34. **Personnel designated to perform maintenance functions.** Personnel designated to perform maintenance functional checks (ground/airborne) must meet the requirements IAW AR 95-23 and be able to objectively access and document the unmanned aircraft performance according to appropriate maintenance standards.

FLIGHT EVALUATION CRITERIA

3-35. **PFE.** This evaluation will be conducted IAW AR 95-23 and this TC. The commander (or representative) will select the topics to be evaluated from academic/oral evaluation topics lists.

3-36. **APART standardization evaluation.** The operator must demonstrate proficiency in all tasks with an "S" in the evaluation column of the table listed in the appropriate appendix as well as any mission/additional tasks designated in the crewmembers CTL as mandatory evaluation tasks. If the evaluated crewmember is an SO/IO, a SO must evaluate the SOs/IOs ability to instruct tasks. SO/IOs are not authorized to count flights, while not physically on the controls operating the UAS, as credit for their APART standardization flight evaluation.

3-37. **Maintenance functional checks (ground/airborne) evaluation.** This evaluation will be conducted while operating the UA. The operator must demonstrate proficiency in all maintenance functional tasks (ground/airborne).

3-38. **Other flight evaluations.** These evaluations will be conducted IAW unit SOPs and local regulations.

ACADEMIC/ORAL EVALUATION CRITERIA

3-39. **PFE.** This evaluation is conducted IAW AR 95-23 and this TC. The commander (or representative) will select the topics to be evaluated from the academic/oral evaluation topics lists.

3-40. **APART standardization written/oral evaluation.** The IO will evaluate a minimum of two topics from the subject areas that apply. If evaluated, topics selected will be based on the unit METL. In addition, the evaluator will have the examinee identify at least two system components and discuss their functions.

3-41. **APART evaluation of aircraft operator with maintenance functional checks designation.** The aircraft operator designated to perform maintenance functions will be evaluated on topics from the appropriate subject areas with specific emphasis on maintenance related subjects and procedures (ground/airborne).**Other ATP evaluations. The SO/IO will evaluate a minimum of two topics from each subj**ect in the academic/oral evaluation topics lists that apply.

EVALUATION SEQUENCE

3-42. The evaluation sequence consists of four phases. The evaluator will determine the amount of time devoted to each phase.

PHASE 1–INTRODUCTION

3-43. In this phase, the evaluator will—
- Review the examinee's IFRF and IATF records to verify that the examinee meets all prerequisites for designation and has a current DA Form 4186.
- Confirm the purpose of the evaluation, explain the evaluation procedure, and discuss the evaluation standards and criteria to be used.

Note. If the evaluation is for an evaluator, the individual conducting the evaluation must explain that the examinee's ability to apply the learning and teaching process outlined in the instructor operator handbook will be evaluated.

Note. For UTs, the evaluation will include special emphasis on the examinee's performance in those areas in which UT duties are performed. The evaluation should ensure that the examinee can safely and effectively perform UT duties.

PHASE 2–ACADEMIC/ORAL EVALUATION TOPICS

3-44. The examinee (all RL 1 operators and/or any operator receiving an evaluation) **must** have a working knowledge and understanding of all applicable topics in the respective subject areas below. Operators undergoing RL progression are exempt from this requirement. As a minimum, the evaluator will select two topics from each appropriate subject area. An evaluator/trainer will also demonstrate an ability to instruct and evaluate any topic. A UT will demonstrate an ability to instruct topics in the areas in which the UT performs UT duties.

3-45. Regulations and publications (AR 95-23, AR 95-2, DA Pam 738-751, TC 3-25.26, DOD FLIPS, local SOPs, Army command supplements, and regulations). Topics in this subject area are—
- ATP requirements (this publication).
- Crew coordination.
- DOD FLIPS and maps.
- Flight plan preparation and filing.
- Forms and records.
- IATF/IFRF.
- Local airspace usage.
- Map reading.

- Publications required for using the UA.
- SOP/tactical standing operating procedures (TACSOPs) requirements.
- Visual flight rules (VFR)/IFR minimums and procedures.
- Weight and balance requirements.

3-46. Aircraft systems, avionics, and mission equipment description and operation (DTM 1-1550-696-10). Topics in this subject are—

- Anti-ice/de-ice (as applicable).
- Communications.
- Control panels/flight instruments.
- Emergency equipment.
- Engines and related systems.
- Flight control systems, datalink (tactical common data link, line of sight [LOS], and satellite communications [SATCOMs]).
- Fuel system.
- GCS, ground data terminal (GDT), tactical automatic landing system (TALS).
- Lighting.
- Navigation equipment.
- Sensors and payloads.
- Transponder and radar.

3-47. Operating limitations and restrictions (DTM 1-1550-696-10). Topics in this subject area are—

- Airspeed limits.
- Altitude limitations.
- Crosswind limitations.
- Electrical limits.
- Engine limitations.
- Generator limitations.
- Laser limitations.
- Loading/weight limits.
- Maneuvering limits.
- Other limitations.
- Performance data/charts.
- Power/engine limits.
- System limits.
- Weather/environmental limitations/restrictions.

3-48. Aircraft emergency procedures and malfunction analysis (DTM 1-1550-696-10, flight information handbook [FIH]). Topics in this subject area are—

- Caution and warning emergency procedures.
- Electrical system malfunctions.
- Emergency recovery system.
- Emergency terms and their definitions.
- Engine malfunctions.
- Fires.
- Flight control malfunctions.
- Fuel system malfunctions.
- Landing procedures.
- Mission equipment.
- Self-destruct system.

● Weapon system malfunction.

3-49. Aeromedical factors (AR 40-8, TB MED 524, FM 6-22.5, and TC 3-04.93). Topics in this subject area are—

● Flight restrictions due to exogenous factors.
● Stress.
● Fatigue.
● Unit crew endurance program.
● Combat stress.
● LASER hazards.

3-50. Fundamentals of flight (FM 3-04.203). Topics in this subject area are—

● Physical laws and principles of airflow.
● Flight mechanics.
● In flight forces.
● Factors affecting performance.
● Stalls.
● Maneuvering flight (rate of climb).
● Crosswind landings.
● Environmental flight (for example cold weather or mountain operations).

3-51. Tactical and mission operations (FM 3-04.111, FM 3-04.126, FM 3-04.513, ATP 3-09.30, TC 3-04.45, and unit SOP). Topics in this subject area are—

● Aerial observation.
● Attack planning and terrain analysis.
● Aviation mission planning.
● Battlefield environment.
● Call for fire and artillery adjustment.
● Cooperative engagements.
● Downed unmanned aircraft procedures.
● Forms of reconnaissance.
● Fratricide prevention.
● Joint attack operations.
● LASER operations/performance distracters.
● LOIs/class (types) hand-off operations.
● Mission equipment.
● Mission statement and employment methods.
● Navigational chart, map, and tactical overlay interpretation.
● Reconnaissance operations (purpose and fundamentals).
● Tactical airspace coordination.
● Tactical reports.
● Terrain analysis.

3-52. Weapon system operation and employment (DTM 1-1550-696-10, FM 3-04.126, and TC 3-04.45). Topics in this subject area are—

● Fire control/fire commands.
● Hellfire missile characteristics.
● Hellfire weapon system (lock-on after launch [LOAL]).
● LASER operations (range/designator).
● LASER performance detractors.
● LASER target line/gun target line considerations.

- Launched flight trajectory constraints.
- Nadir.
- Ordinance identification.
- Techniques of fire and employment.
- Visual search and target detection.
- Weapons initialization, arming, and safety.
- Weapons symbology.

3-53. Unmanned aircraft system (UAS) knowledge (DA Pam 738-751, TC 3-04.7, TM 1-1500-328-23, TM 55-1500-342-23, and applicable TMs). Topics in this subject area are—

- Automatic flight control system.
- Caution panel indications.
- Communication and navigation equipment.
- Electrical system.
- Engine performance check.
- Engine start.
- Flight controls.
- Forms and records.
- Fuel system.
- Instrument indications.
- Maintenance functional check(s) (ground/airborne) requirements (if applicable).
- Power plant.
- Propellers.
- Weight/balance and loading.

3-54. SO, IO, and UT (aviation instructor's handbook [FAA-H-8083-9A]). Topics in this subject area are—

- Critique and evaluations.
- Effective communication.
- Flight instructor characteristics and responsibilities.
- Human behavior.
- Instructional aides.
- Levels of learning.
- Planning instructional activity.
- Principles of learning.
- Teaching methods.
- Teaching process.
- Techniques of flight instruction.
- The instructor as a critic.
- The learning process.
- Types of evaluations.

3-55. Instrument planning and procedures (as applicable). The following is a guide for the administration of the evaluation. The examinee is allowed access to references during the oral evaluation (AR 95-23, FM 3-04.240, operator's manual, AR 95-10, DOD FLIP, FAR/aeronautical information manual [AIM], general procedures guide, area procedures, local regulations and unit SOPs). Topics in this subject are—

- Airspace–types, dimensions and requirements to operate in.
- Army aviation flight information bulletin.
- Arrival procedures.
- Routine meteorological aviation reports (METARs).
- Departure procedures.

- DOD FLIP symbology.
- En route weather services.
- Flight plan preparation.
- Fuel requirements.
- NOTAM.
- Opening and closing flight plans.
- Position reports.
- Required weather for takeoff, en route, destination and alternate.
- Terminal aerodrome forecasts.
- Transponder requirements.
- VFR/IFR minimums and procedures.
- Weather hazards.

PHASE 3–FLIGHT EVALUATION

3-56. If this phase is required, the following procedures apply:

- **Briefing.** The evaluator will explain the flight evaluation procedure and brief the examinee on which tasks will be evaluated. When evaluating an evaluator/trainer, the evaluator must advise the examinee that during role reversal, the evaluator may deliberately perform some tasks outside standards to check the examinee's diagnostic and corrective action skills. The evaluator will conduct or have the examinee conduct a crew briefing IAW Task 1001. At a minimum, the following items will be briefed:
    - Control transfer procedures.
    - Crew duties, to include emergency duties.
    - Engine-failure procedures.
    - Flight route.
    - Mission.
    - Performance data.
    - Weapons configuration/setup.
    - Weather.
- **Before exterior inspection procedures**. The evaluator will evaluate the examinee's use of the appropriate TMs/checklists (CLs)/technical bulletins (TBs), and/or the integrated electronic technical manual as appropriate. The evaluator will have the examinee identify and discuss the functions of at least two UA systems.
- **Flight tasks.** At a minimum, the evaluator will evaluate those tasks listed on the CTL as mandatory for the designated crew station(s) for the type of evaluation being conducted and those mission or additional tasks selected by the commander. The evaluator, in addition to the commander-selected tasks, may randomly select for evaluation any task listed on the mission or additional task list. An IO, SO, and UT must demonstrate an ability to instruct and/or evaluate appropriate flight tasks. When used as part of the proficiency flight evaluation, the evaluation may include an orientation of the local area, checkpoints, and other pertinent information.
- **After landing tasks**. The evaluator will evaluate the examinee's use of the appropriate TMs/CLs/TBs, and/or integrated electronic technical manual as appropriate.

PHASE 4–DEBRIEFING

3-57. Upon completing the evaluation, the evaluator will—

- Discuss the examinee's strengths and weaknesses.
- Offer recommendations for improvement.
- Notify if the examinee passed or failed the evaluation and discuss any tasks not performed to standards.

● Complete the applicable forms and ensure that the examinee reviews and initials the appropriate forms.

Note. Evaluator will inform the examinee of any restrictions, limitations, or revocations that the evaluator will recommend to the commander following an unsatisfactory evaluation.

Note. A training plan will be developed for the crewmember to allow them to regain proficiency in tasks that were evaluated as unsatisfactory.

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Chapter 4

Aircrew Coordination

This chapter describes the background of crew coordination development. It also describes the crew coordination principles and objectives, as found in the Army ACT-E training program.

> *Note.* Digitization of the crew compartments has expanded and redefined the lines of responsibility for each crewmember. The enhanced ability for either operator to perform most UA/system functions from their crew station breaks down the standard delineation of duties and has added capabilities, and potential distractions, in training and in combat. This could mean that during an unforeseen event, one operator may attempt to resolve the situation rather than seeking assistance from or even communicating that action with the other crewmember. It is essential for the AC to brief specific duties. Effective sharing of tasks relies on good crew coordination and information management.

CREW COORDINATION BACKGROUND AND PLANNING STRATEGY

4-1.   An analysis of United States Army aviation accidents revealed that a significant percentage of UA accidents resulted from one or more crew coordination errors committed during and even before the flight mission. Often, an accident was the result of a sequence of undetected crew errors that combined to produce a catastrophic result. Additional research showed that even when crews actually avoided potential accidents, these same errors could result in degraded **performance that jeopardized mission success.** A systematic analysis of these error patterns identified specific areas where crew-level training could reduce the occurrence of such faults and break the **chain of errors** leading to accidents and poor mission performance.

4-2.   Crew coordination patterns begin with the accomplishment of crew-level pre-mission planning, rehearsal, and after-action reviews. Pre-mission planning includes all preparatory tasks associated with accomplishing the mission. This would include assigning crewmember responsibilities and conducting all required briefings and brief-backs. Pre-mission rehearsal involves the crew collectively visualizing and discussing expected and potential unexpected events for the entire mission. Through this process, all crewmembers discuss and think through contingencies and actions for difficult segments, equipment limitations and failures, or unusual events associated with the mission, and develop strategies to cope with possible contingencies mission, enemy, terrain and weather, troops and support available, time available, and civilian considerations (METT-TC).

4-3.   Each crewmember must actively participate in the mission planning process to ensure a common understanding of mission intent and operational sequence. The AC prioritizes planning activities so that critical items are addressed within the available planning time. Crewmembers must then mentally rehearse the entire mission by visualizing and discussing potential problems, contingencies, and assigned responsibilities. The AC ensures that crewmembers take advantage of periods of low workload to review or rehearse upcoming flight segments. Crewmembers should continuously review remaining flight segments to identify required adjustments, making certain their planning is consistently ahead of critical lead times.

4-4.   After a mission or mission segment, the crew should debrief, review, and critique major decisions, their actions, and task performance. This should include identifying options and factors that were omitted from earlier discussion and outline ways to improve crew performance in future missions. Remember, this discussion and critique of crew decisions and actions must remain professional. "Finger pointing" is not the intent and shall be avoided; the emphasis should remain on education with the singular purpose of improving crew and mission performance.

CREW COORDINATION PRINCIPLES

4-5. Broadly defined, crew coordination is the cooperative interaction between crewmembers necessary for the safe, efficient, and effective performance of flight tasks. The essential principles and qualities of crew coordination are described in figure 4-1.
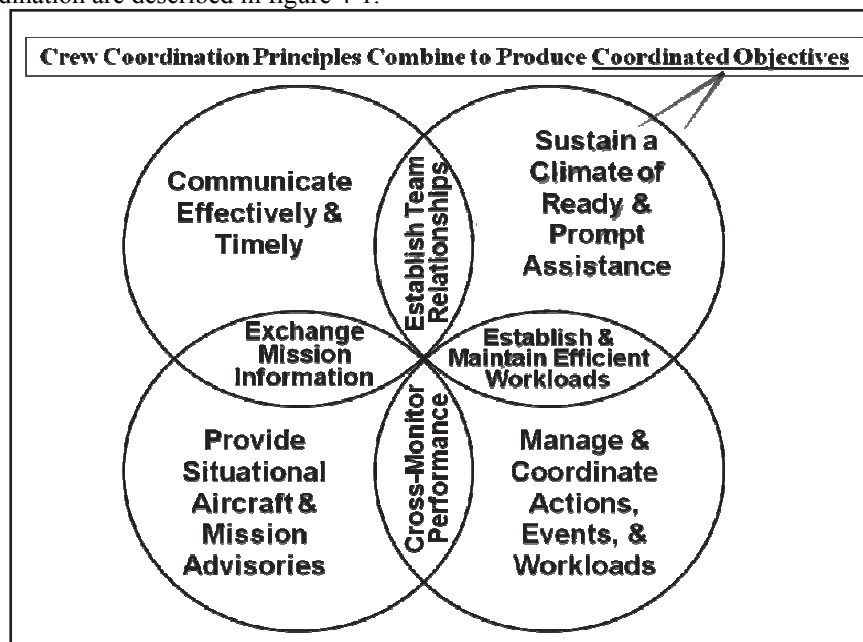
Figure 4-1. Aircrew coordination objectives

COMMUNICATE EFFECTIVELY AND TIMELY

4-6. Good team relationships begin with effective communication among crewmembers. Communication is effective when the sender directs, announces, requests, or offers information; the receiver acknowledges the information; and the sender confirms the receipt of information, based on the receiver's acknowledgment or action. This enables the efficient flow and exchange of important mission information that keeps a crew on top of any situation that arises.

4-7. **Announce and acknowledge decisions and actions.** To ensure effective and well-coordinated actions while operating the UA, all crewmembers must be kept informed and made aware of decisions, expected movements of crew and UA, and the unexpected individual actions of others. Each crewmember will announce any actions that may affect the actions of other crewmembers. Subsequently, communications while operating the UA must include supportive feedback that clearly indicates that crewmembers acknowledge and correctly understand announcements, decisions, or directives of other crewmembers.

4-8. **Ensure that statements and directives are clear, timely, relevant, complete, and verified.** These qualities describe the kind of communication that is effective. Considering the fleeting moments of time in a busy aviation environment, only one opportunity may exist to convey critical and supporting information before tragedy strikes. That information must be clearly understood, not confusing, and spoken at the earliest opportunity possible. It must be applicable to the events at hand to support the needs and security of the mission. The information must include all elements needed to make the best decision based on its urgency; and the communication must come with ability of proven confirmation and without redundancy. It must also include the crew's use of standard terminology and feedback techniques that accurately validate information transfer. Emphasis is on the quality of statements associated with navigation, obstacle clearance, instrument readouts, and emergencies. Specific goals include the following:

- Crewmembers consistently make the required callouts. Their statements and directives are always timely. Their response to unexpected events is made in a composed, professional manner.

- Crewmembers actively seek feedback when they **do not** receive acknowledgment from another crewmember. Crewmembers always acknowledge the understanding of intent and request clarification when necessary.

4-9. **Be explicit.** Crewmembers should use clear, concise terms, standard terminology, and phrases that accurately convey critical information. Crewmembers must avoid using terms that have multiple meanings, such as "right," "back up," or "I have it." Crewmembers must also avoid using indefinite modifiers such as, "Do you see that tree?" or "You are coming in a little fast."

SUSTAIN A CLIMATE OF READY AND PROMPT ASSISTANCE

4-10. The requirement to maintain a professional atmosphere by all members of the team begins with the team leadership of the AC. However, all crewmembers must equally respect the value of other crewmember's expertise and judgment regardless of rank, duty, or seniority. Every member has a responsibility to maintain situational awareness for mission requirements, flight regulations, operating procedures, and safety. Each crewmember must be willing to practice advocacy and assertiveness should the situation demand a different course of action, as time permits. It is critical to maintain this crew climate that enables opportunity to apply appropriate decision-making techniques for defining the best course of action when problems arise. Courses of action may demand that assistance be directed to other crewmembers or could be voluntary assistance that is offered in a timely manner, depending on time constraints and information available. All crewmembers must remain approachable, especially in critical phases of flight when reaction time is at a premium.

> *Note.* The two-challenge rule allows one crewmember to assume the duties of another crewmember who fails to respond to two consecutive challenges automatically. For example, the AO becomes fixated, confused, task overloaded, or otherwise allows the UA to enter an unsafe position or attitude. The AC first asks the AO whether he/she is aware of the UA position or attitude. If the AO does not acknowledge this challenge, the AC issues a second challenge. If the AO fails to acknowledge the second challenge, the AC assumes control of the UA.

4-11. **Flight team leadership and crew climate are established and maintained.** This quality addresses the relationships among the crew and the overall climate of the flight deck. Aircrews are teams with a designated leader and clear lines of authority and responsibility. The AC sets the tone for the crew and maintains the working environment. Effective leaders use their authority, but **do not** operate without the participation of other crewmembers. When crewmembers disagree on a course of action, they must be effective in resolving the disagreement. Specific goals include the following:
- The AC actively establishes an open climate where crewmembers freely talk and ask questions.
- Crewmembers value each other for their expertise and judgment. They **do not** allow differences in rank and experience to influence their willingness to speak up.
- Alternative viewpoints are a normal and occasional part of crew interaction. Crewmembers handle disagreements in a professional manner, avoiding personal attacks or defensive posturing.
- The AO actively monitors the attitudes of crewmembers and offers feedback when necessary. Each crewmember displays the proper concern for balancing safety with mission accomplishment.

MANAGE AND COORDINATE ACTIONS, EVENTS, AND WORKLOAD

4-12. The crew performing as a team should avoid distractions from essential activities while distributing and managing the workloads equally. Both the technical and managerial aspects of coping with normal and unusual situations are important. Proper sequencing and timing guarantees that the actions of one crewmember support and mesh with the actions of the other crewmembers. Responsible effort must be used to ensure that actions and directives are clear, timely, relevant, complete, verified, and coordinated with minimal direction from the AC.
- Direct assistance. A crewmember will direct or request assistance when he or she cannot maintain UA control, position, or clearance. A crewmember will also direct assistance when being overloaded with tasks or unable to properly operate or troubleshoot UA systems without

help from the other crewmembers. The AC ensures that all crew duties and mission responsibilities are clearly assigned and efficiently distributed to prevent the overloading of any crewmember, especially during critical phases of flight. Crewmembers should also watch for workload buildup on others and react quickly to adjust the distribution of task responsibilities.

● Prioritize actions and equitably distribute workload. Crewmembers are always able to identify and prioritize competing mission tasks. They never ignore flight safety and other high-priority tasks. They appropriately delay low-priority tasks until those tasks **do not** compete with tasks that are more critical. Crewmembers consistently avoid nonessential distractions so that these distractions **do not** affect task performance (sterile cockpit) or ability to help another crewmember. Crew actions should reflect extensive review of procedures in prior training and pre-mission planning and rehearsal.

PROVIDE SITUATIONAL AIRCRAFT AND MISSION ADVISORIES

4-13. Although the A is responsible for UA control, the other crewmembers may need to provide UA control information regarding UA position (airspeed, altitude, etc), orientation, obstacle avoidance, equipment and personnel status, environmental and battlefield conditions, and changes to mission objectives or evolving situations of the mission (situational awareness). Crewmembers must anticipate and offer supporting information and actions to the decision-maker, which is usually the AC. Specific goals include the following:

● Situational awareness. Crewmembers must anticipate the need to provide information or warnings to the AC or AO during critical phases of the flight or mission. The AC must encourage crewmembers to exercise the freedom to raise issues or offer information about safety or mission related matters. In turn, the crewmembers will provide the required information and warnings in a timely and professional manner. None of this could be accomplished without cross-monitoring performance and crew tasks.

● Mission changes and updates. Crewmembers should routinely update each other while highlighting and acknowledging mission changes. They must take personal responsibility for scanning the entire flight environment, considering their assigned workload and areas of scanning. Each crewmember needs to appropriately adjust individual workload and task priorities with minimal verbal direction from the AC when responding to emergencies and unplanned changes of the mission.

● Offer assistance. A crewmember will provide assistance, information, or feedback in response to another crewmember. A crewmember will also offer assistance when he or she detects errors or sees that another crewmember needs help. In the case where safety or mission performance is at risk, immediate challenge and control measures must be assertively exercised. A crewmember should quickly and professionally inform and assist the other crewmember committing the error. When required, they must effectively implement the two-challenge rule with minimal compromise to flight safety. This means that you must continually cross-monitor other crewmember's actions and remain capable of detecting each other's errors. Such redundancy is particularly important when crews are tired or overly focused on critical task elements and thus more prone to make errors. Crewmembers must discuss conditions and situations that can compromise situational awareness. These include, but are not limited to, stress, boredom, fatigue, and anger.

4-14. **Pre-mission planning and rehearsal are accomplished**. Pre-mission planning includes all preparatory tasks associated with planning the mission. Preparatory tasks also include assigning crewmember responsibilities and conducting all required briefings and brief backs. Pre-mission rehearsal involves the crew collectively visualizing and discussing expected and potentially unexpected events for the entire mission. Through this process, all crewmembers think through contingencies and actions for difficult segments or unusual events associated with the mission and develop strategies to cope with contingencies. Specific goals include the following:

● The AC ensures that all actions, duties, and mission responsibilities are partitioned and clearly assigned to specific crewmembers. Each crewmember actively participates in the mission planning process to ensure a common understanding of mission intent and operational sequence.

The AC prioritizes planning activities so that critical items are addressed within the available planning time.

- The crew identifies alternate courses of action in anticipation of potential changes in METT-TC and is fully prepared to implement contingency plans as necessary. Crewmembers mentally rehearse the entire mission by visualizing and discussing potential problems, contingencies, and responsibilities.

- The AC ensures that crewmembers take advantage of periods of low workload to rehearse upcoming flight segments. Crewmembers continuously review remaining flight segments to identify required adjustments. Their planning is consistently ahead of critical lead times.

4-15. **Appropriate decision-making techniques are applied**. Decision making is the act of rendering a solution to a problem and defining a plan of action. It must involve risk assessment. The quality of decision making and problem solving throughout the planning and execution phases of the mission depends on the information available, time constraints, and level of involvement and information exchanged among crewmembers. The crew's ability to apply appropriate decision-making techniques based on these criteria has a major impact on the choice and quality of their resultant actions. Although the entire crew should be involved in the decision making and problem-solving process, the mission AC is the key decision maker. Specific goals include the following:

- Under high-time stress, crewmembers rely on a pattern-recognition decision process to produce timely responses. They minimize deliberation consistent with the available decision time. Crewmembers focus on the most critical factors influencing their choice of responses. They efficiently prioritize their specific information needs within the available decision time.

- Under moderate- to low-time stress, crewmembers rely on an analytical decision process to produce high-quality decisions. They encourage deliberation when time permits. make the most unbiased decision possible, crewmembers consider all important factors influencing their choice of action. They consistently seek all available information relative to the factors being considered.

4-16. **Actions are prioritized and workload is equitably distributed**. This quality addresses the effectiveness of time and workload management. It assesses the extent to which the crew—as a team—avoids distractions from essential activities, distributes and manages workload, and avoids individual task overload. Specific goals include the following:

- Crewmembers are always able to identify and prioritize competing mission tasks. They never ignore flight safety and other high-priority tasks. They appropriately delay low-priority tasks until those tasks **do not** compete with more critical tasks. Crewmembers consistently avoid nonessential distractions so that these distractions **do not** impact on task performance.

- The AC distributes mission tasks to prevent overloading of any crewmember, especially during critical phases of flight. Crewmembers watch for workload buildup on others and react quickly to adjust the distribution of task responsibilities.

4-17. **Unexpected events are managed effectively**. This quality addresses the crew's performance under unusual circumstances that may involve high levels of stress. Both the technical and managerial aspects of coping with the situation are important. Specific goals include the following:

- Crew actions reflect extensive rehearsal of emergency procedures in prior training and pre-mission planning and rehearsal.

- Crewmembers coordinate their actions and exchange information with minimal verbal direction from the AC. They respond to the unexpected event in a composed, professional manner.

- Each crewmember appropriately or voluntarily adjusts individual workload and task priorities with minimal verbal direction from the AC. The AC ensures that each crewmember is used effectively when responding to the emergency and that the workload is efficiently distributed.

4-18. **Statements and directives are clear, timely, relevant, complete, and verified**. This quality refers to the completeness, timeliness, and quality of information transfer. It includes the crew using standard terminology and feedback techniques to verify information transfer. Emphasis is on the quality of instructions and statements associated with navigation, obstacle clearance, and instrument readouts. Specific goals include the following:

- Crewmembers consistently make the required call outs. Their statements and directives are always timely.
- Crewmembers use standard terminology in all communications. Their statements and directives are clear and concise.
- Crewmembers actively seek feedback when they **do not** receive acknowledgment from another crewmember. Crewmembers always acknowledge understanding of intent and request clarification when necessary.

4-19. **Mission situational awareness is maintained**. This quality considers the extent to which crewmembers keep each other informed about the status of the UA and the mission. Information reporting helps the aircrew maintain a high level of situational awareness. The information reported includes UA position and orientation, equipment and personnel status, environmental and battlefield conditions, and changes to mission objectives. Awareness of the situation by the entire crew is essential for a safe flight and effective crew performance. Specific goals include the following:

- Crewmembers routinely update each other and highlight and acknowledge changes. They take personal responsibility for scanning the entire flight environment, considering their assigned workload and areas of scanning.
- Crewmembers actively discuss conditions and situations that can compromise situational awareness. These include, but are not limited to, stress, boredom, fatigue, and anger.

4-20. **Decisions and actions are communicated and acknowledged**. This quality addresses the extent to which crewmembers are kept informed of decisions made and actions taken by another crewmember. Crewmembers should respond verbally or by appropriately adjusting their behaviors, actions, or control inputs to clearly indicate that they understand when a decision has been made and what it is. Failure to do so may confuse crews and lead to uncoordinated operations. Specific goals include the following:

- Crewmembers announce decisions and actions, stating their rationale and intentions as time permits. The UAC verbally coordinates the transfer of or inputs to controls before action is taken.
- Crewmembers always acknowledge announced decisions or actions and provide feedback on how these decisions or actions will affect other crew tasks. If necessary, they promptly request clarification of decisions or actions.

4-21. **Supporting information and actions are sought**. This quality addresses the extent to which supporting information and actions are sought from the crew by another crewmember. Crewmembers should feel free to raise questions during the flight regarding plans, revisions to plans, actions to be taken, and the status of key mission information. Specific goals include the following:

- The AC encourages crewmembers to raise issues or offer information about safety or the mission. Crewmembers anticipate impending decisions and actions and offer information as appropriate.
- Crewmembers always request assistance from others before they become overloaded with tasks or before they must divert their attention from a critical task.

4-22. **Crewmember actions are mutually cross monitored**. This quality addresses the extent to which a crew uses cross monitoring as a mechanism for breaking error chains that lead to accidents or degraded mission performance. Crewmembers must be capable of detecting each other's errors. Such redundancy is particularly important when crews are tired or overly focused on critical task elements and thus more prone to make errors. Specific goals include the following:

- Crewmembers acknowledge that crew error is a common occurrence and the active involvement of the entire crew is required to detect and break the error chains that lead to accidents. They constantly watch for crew errors affecting flight safety or mission performance. Crewmembers monitor their own performance as well as that of others. When they note an error, they quickly and professionally inform and assist the crewmember committing the error.
- The crew thoroughly discusses the two-challenge rule before executing the mission. When required, crewmembers effectively implement the two-challenge rule with minimal compromise to flight safety.

Note. The two-challenge rule allows one crewmember to automatically assume the duties of another crewmember who fails to respond to two consecutive challenges. For example, the AO becomes fixated, confused, task overloaded, or otherwise allows the UA to enter an unsafe position or attitude. The payload operator (PO) first asks the AO whether the AO is aware of the UA position or attitude. If the AO does not acknowledge this challenge, the PO issues a second challenge. If the AO fails to acknowledge the second challenge, the PO takes corrective action.

4-23. **Supporting information and actions are offered**. This quality addresses the extent to which crewmembers anticipate and offer supporting information and actions to the decision maker (usually the AC) when apparently a decision must be made or an action taken. Specific goals include the following:

- Crewmembers anticipate the need to provide information or warnings during critical phases of the flight. They provide the required information and warnings in a timely manner.
- Crewmembers anticipate the need to assist during the critical phases of flight. They provide the required assistance when needed.

4-24. **Advocacy and assertion are practiced**. This quality concerns the extent to which crewmembers are proactive in advocating a course of action they consider best, even when others may disagree. Specific goals include the following:

- While maintaining a professional atmosphere, crewmembers state the rationale for their recommended plans and courses of action when time permits. Crewmembers request feedback to make sure others have correctly understood their statements or rationale. Time permitting, other crewmembers practice good listening habits; they wait for the rationale before commenting on the recommended plans or courses of action.
- The AC actively promotes objectivity by encouraging other crewmembers to speak up despite their rank or experience. Junior crewmembers **do not** hesitate to speak up when they disagree with senior members; they understand that more experienced crewmembers can sometimes commit errors or lose situational awareness. Every member of the crew displays a sense of responsibility for adhering to flight regulations, operating procedures, and safety standards.

4-25. **Crew-level after action reviews are conducted.** This quality addresses the extent to which crewmembers review and critique their actions during or after a mission segment, during periods of low workload, or during the mission debriefing. Specific goals include the following:

- The crew critiques major decisions and actions. They identify options and factors that should have been discussed and outline ways to improve crew performance in future missions.
- The critique of crew decisions and actions is professional. "Finger-pointing" is avoided; the emphasis is on education and improvement of crew performance.

CREW COORDINATION OBJECTIVES

4-26. Crew coordination principles and objectives originate from and are fundamentally supported by a set of individual, professional skills. Each crewmember is responsible for attaining the leadership skills of effective communication, resource management, decision-making, situational awareness, team building, and conflict resolution. When crewmembers are actively using these skills and practicing crew coordination principles, results can be seen and measured to determine whether the objectives of the crew coordination program are being met. The goals of the program have been defined by four crew coordination objectives. The four objectives are as follows (figure 4-1, page 4-2):

- **Establish and maintain team relationships.** Establish a positive working relationship that allows the crew to communicate openly, freely, and effectively in order to operate in a concerted manner where a climate of professional assistance is easily found and promptly provided.
- **Establish and maintain efficient workloads.** Manage and coordinate priorities and execute the mission workload in an effective and efficient manner with the redistribution of task responsibilities as the mission situation changes. Flight duty responsibilities are performed in a timely manner where mission needs are always anticipated.

- **Exchange mission information.** Establish all levels of crew and mission communications using effective patterns and techniques that allow for the flow of essential data and mission advisories among all crewmembers in a timely and accurate manner.
- **Cross-monitor performance.** Cross-monitor each other's actions and decisions to ensure workloads and crew actions are performed in a coordinated manner and to standard. Cross-monitoring crewmember performance keeps a crew ready to provide UA and mission advisories to each other and helps to reduce the likelihood of errors affecting mission performance and safety.

STANDARD CREW TERMINOLOGY

4-27. To enhance communication and crew coordination, crews should use words or phrases that are understood by all participants. Crewmembers must use clear, concise terms that can be easily understood and complied with in an environment full of distractions. Multiple terms with the same meaning should be avoided. DOD FLIP contains standard terminology for radio communications. Operator's manuals contain standard terminology for items of equipment. Table 4-1 provides a list of standard words and phrases that crewmembers should use.

Table 4-1. Examples of standard words and phrases

Standard Word or Phrase	*Meaning of Standard Word or Phrase*
Abort	Terminate a preplanned aircraft maneuver.
Affirmative	Yes.
Air target	Detected fast mover or helicopter.
Bandit	An identified enemy aircraft.
Bingo	Fuel state needed for recovery/landing.
Blind	No visual contact of friendly aircraft/ground position. Opposite of VISUAL.
Bogey	An unidentified aircraft assumed to be an enemy.
Break	Immediate action command to perform an emergency maneuver to deviate from the present ground track; will be followed by the word "right," "left," "up," or "down."
Call out	Command by the A for a specified procedure to be read from the checklist by the other crewmember.
Cease fire	Command to stop firing but continue to track.
Clear	No obstacle is present to impede aircraft movement along the intended ground track. Will be preceded by the word "nose," "tail," or "aircraft" and followed by the direction (for example, "left," "right," "slide left," or "slide right"). Also indicates that ground personnel are authorized to approach the aircraft.
Climb	Command to change altitude up.
Come up/down	Command to change altitude up or down; normally used to control masking and unmasking operations.
Contact	(1) Establish communication with (followed by the name of the element). (2) Sensor contact at the stated position. (3) Acknowledges sighting of a specified reference point (either visually or via sensor). (4) Individual radar return within a GROUP or ARM.

Table 4-1. Examples of standard words and phrases, continued

Standard Word or Phrase	*Meaning of Standard Word or Phrase*
Correct	Confirms a statement as being accurate or right. Do not use the word "right" to indicate correct.
Deadeye	Laser designator system inoperative.
Descend	Command to decrease altitude.
Drifting	An alert of the unannounced movement of the aircraft; will be followed by directions.
Execute	Initiate an action.
Expect	Anticipate further instructions or guidance.
Firing	Announcement that a specific weapon is to be fired.
Go ahead	Proceed with your message.
Go plain/red	Command to discontinue secure operations.
Go secure/green	Command to activate secure communications.
Hold	Command to maintain present position.
In sight	Preceded by the word "traffic," "target," "obstacle," or descriptive term. Used to confirm the traffic, target, or obstacle is positively seen or identified.
Laser On	Start/acknowledge LASER designation.
Lasing	The speaker is firing the LASER.
Maintain	Command to continue or keep the same.
Monitor	Command to maintain constant watch or observation.
Negative	Incorrect or permission not granted.
Negative contact	Unable to establish communication with (followed by name of element).
No joy	Crew does not have positive visual contact with the target/bandit/traffic/obstruction/landmark. Opposite of TALLY.
Report	Command to notify.
Right	Used to indicate a direction only, not to be used in place of "correct."
Roger	Message received and understood.
Say again	Repeat your transmission.
Slow down	Command to decrease ground speed.
Speed up	Command to increase ground speed.
Stand by	Wait; duties of a higher priority are being performed and request cannot be complied with at this time.
Stop	Command to go no further; halt present action.
Tally	Sighting of a target, non-friendly aircraft, enemy position, landmark, traffic, or obstruction positively seen or identified; will be followed by a repeat of the word "target," "traffic," or "obstruction" and the clock position. Opposite of "No Joy".
Target	An alert that a ground threat has been spotted.
Traffic	Refers to friendly aircraft that present a potential hazard to the current route of flight; will be followed by an approximate clock position and the distance from your aircraft with a reference to altitude (high or low).

Table 4-1. Examples of standard words and phrases, continued

Standard Word or Phrase	*Meaning of Standard Word or Phrase*
Turn	Command to deviate from the current heading; will be followed by the word "right" or "left," and a specific heading or rally term.
Visual	Sighting of a friendly aircraft/ground position. Opposite of BLIND.
Unable	Indicates the inability to comply with a specific instruction or request.
Weapons hot/cold/off	Indicates weapon switches are in the ARMED, SAFE, or OFF position.
Zoom In/Out	Increase/decrease the sensor's focal length. ZOOM IN/OUT is normally followed by "ONE, TWO, THREE, or FOUR": to indicate the number of fields of view (FOVs) to change. Note. It is recommended only one change in or out at a time be used for the FOV.

AIRCREW COORDINATION TRAINING-ENHANCED

4-28. ACT-E sustainment training will be completed annually during the crewmember's ATP year. ACT-E is a two part system qualification and sustainment.

4-29. Part I–Qualification. Operators are initially ACT-E qualified at USAACE. All other crewmembers are initially qualified by an ACT-E instructor using the most current USAACE approved qualification course.

4-30. Part II–Sustainment. All crewmembers are required to complete the training each ATP year via the United States Army Blackboard server at the following website: https://ellc.learn.army.mil .

- ACT-E qualification and sustainment training are instructor-led courses that use multimedia in a vignette-based presentation. This form of instruction allows instructors to facilitate free and open discussions, enabling crewmembers to operate more safely and effectively. Instructors must request access to register. The point of contact for the ACT-E courseware and ACT-E issues may be contacted at: ruck.acte@conus.army.mil.

- All Active Army, Reserve Component, DAC, contractor operators, and GCMs will receive ACT-E qualification and sustainment training.

- FAC 1 and FAC 2 crewmembers may not progress to RL 1 until ACT-E qualification is completed.

- All crewmembers will complete the ACT-E sustainment training, led by an ACT-E instructor each ATP year. Commanders must ensure that the crewmember will not exceed 15 consecutive months without having completed ACT-E sustainment or qualification training so the crewmember receives ACT-E training every ATP year.

- RL 1 and FAC 3 crewmembers failing to complete ACT-E training by the end of their APART period will be restricted from performing flight duties until the requirement is completed.

- ACT-E qualified instructors will submit information for enrollment into the ACT-E courseware site IAW procedures described at the following website: https://training.rucker.army.mil/protected/ACT_E/ACTE.html. Once approved, ACT-E initial qualification and sustainment training may be accessed via the United States Army Blackboard server at the following website: https://ellec.learn.army.mil.

- The following standardization personnel (SO/IO) are authorized to conduct ACT-E training as an ACT-E instructor:

  - Standardization personnel (SO/IO), upon completion of an USAACE-approved IO course.

  - Standardization personnel (SO/IO) who were previously instructor qualified to teach ACT or ACT-E qualification training.

  - Current and qualified ACT-E instructors may also qualify other standardization personnel (SO) as ACT-E instructors.

- Instructor qualified operators may conduct initial ACT-E qualification, sustainment, and instructor qualification training for operators, and WOs with limited payload duties.
- ACT-E initial qualification and annual sustainment training will be annotated on the individual's DA Form 7122-R as an event and in the remarks section of the individual's DA Form 759 during the annual close-out.
- Flight training (UA/flight simulator). For ACT-E qualification, crewmembers are required to undergo a 1-hour ACT-E training/evaluation flight in either the crewmembers primary aircraft flight simulator (if available) or the UA. ACT-E qualified IOs and SOs may conduct all UAC flight training.

ANNUAL AIRCREW COORDINATION TRAINING-ENHANCED EVALUATION REQUIREMENTS

4-31. Crewmembers will be evaluated on ACT-E during RL progression. Aircrew coordination will be evaluated during the conduct of every standardization evaluation to include the APART. Crew coordination is a component of every individual, crew, maintenance, standardization, and special task.

AIRCREW COORDINATION TRAINING–ENHANCED DOCUMENTATION

4-32. "ACT-E initial qualification complete," will be annotated on the individual's DA Form 7122-R and in the remarks section of the individual's DA Form 759 on close out.

4-33. "ACT-E sustainment complete," will be annotated on the individual's DA Form 7122-R and in the remarks section of the individual's DA Form 759 on close out.

WAIVERS

4-34. Waivers may be granted only for those individuals/units that are in a deployment status and cannot accomplish the ACT-E training. Waiver authority will be the first O-6 in the chain of command and will be annotated in the crewmember's IATF on DA Form 7122-R, DA Form 7120-3-R, and DA Form 759. Individuals/units that are granted waivers because of deployments must complete the ACT-E qualification/refresher training requirements within 180 days of arrival to home station.

AIRCREW COORDINATION TRAINING-ENHANCED REFERENCE

4-35. ACT-E courseware may be accessed via the USAACE Digital Training Access Center at: https://ellec.learn.army.mil. Access to AKO is required to access this site.

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Chapter 5

Individual Aircrew Training Folder

LABELS AND CONTENTS

5-1. The ATP records system provides commanders with a comprehensive performance record on each crewmember in their units. The required forms can be completed by hand using dark blue ink, black ink, red ink, by computer, or utilizing DA approved computer software. Aircrew training records are important quality control and standardization tools. Fill out forms carefully, completely, and legibly. The samples of completed DA forms in this TC illustrate the intent of the written instructions; however, they cannot cover every possible situation. Use the "Remarks" section of the forms and/or the comment slips to explain situations not clearly covered by the written guidelines. Commanders are responsible to ensure that only events and remarks pertinent to the ATP are annotated in the IATF. Commanders have the authority to remove comments entered outside the scope of the ATP.

RESPONSIBILITIES

5-2. Commanders must ensure that an IATF is prepared and maintained for each operator assigned or attached to their unit. Units will maintain a DA Form 7122-R for all personnel designated as MC. Figures 5-1 and 5-2, page 5-2, show the required layout and contents for the IATF. Use DA Form 3513 (Individual Flight Records Folder, United States Army). Prepare it by changing the words "flight records" on the front cover to "aircrew training." Crewmembers assigned or attached for flight duty will present their IATF to the commander or the commander's designated representative on arrival in the unit. Units will process crewmembers that are not assigned to operational flying positions IAW DA regulations, Army command directives, and installation guidance.

> *Note.* The Army Records Information Management System (ARIMS) (http://www.ARIMS.army.mil) must be used to complete the labels in figure 5-1.

Aircraft Operator

KN6 Individual Aircrew Training Folder: Doe, John (13) PA:A0001SAIS

Birth Month: June

Keep in current files area until no longer needed (NLN), not to exceed six years, then destroy.

INDIVIDUAL AIRCREW TRAINING FOLDER

KN-keep no longer
PA-Privacy Act
SAIS-Standard Automated Information Systems.

Figure 5-1. Individual aircrew training folder label sample

LEFT SIDE OF FOLDER	RIGHT SIDE OF FOLDER
(File items in the order listed.)	(File items in the order listed.)
1. Current training year's DA Forms: • DA Form 7120-R (Commander's Task List). • DA Form 7120-1-R (Crewmember Task Performance and Evaluation Requirements). • DA Form 7120-2-R (Crewmember Task Performance and Evaluation Requirements Continuation Sheet) (if used). • DA Form 7120-3-R (Crewmember Task Performance and Evaluation Requirements, Remarks, and Certification). 2. The preceding DA Forms: • DA Form 7120-R. • DA Form 7120-1-R. • DA Form 7120-2-R. • DA Form 7120-3 R.	1. Grade slips for qualification, individual refresher, crew, or mission training. (DA Form 4507-R through 4507-2-R). Maintain in the individual aircrew training folder until completion of the first annual proficiency and readiness test/year. 2. DA Form 7122-R (Crewmember Training Record). 3. Miscellaneous. • Waivers. • Local required forms. ***Note.*** Incomplete grade slips can be maintained on top of the DA Form 7122-R until training is completed and a summary is posted to the DA Form 7122-R). (Remove these grade slips when a summary is posted to the DA Form 7122-R.)

Figure 5-2. Individual aircrew training folder contents

5-3.   At the completion of the training year, provide the information required from DA Forms 7120-R and 7122-R to the authorized centralized aviation flight records system (CAFRS) personnel for DA Form 759 closeout IAW FM 3-04.300. After an individual's release from active duty, retirement, discharge, resignation, assignment to the USAR control group, or death, the unit will process the IATF IAW AR 95-23.

DEPARTMENT OF THE ARMY FORM 7120-R

5-4.   The ATP commander develops a task list to support crewmembers designated duty positions. The CTL consists of the DA Form 7120 series and all enclosures. The CTL designates the authorized duties and flight stations the crewmember may occupy and the hours, tasks, iterations, evaluation requirements, and responsibilities the crewmember must accomplish during the training year. The CTL is initiated whenever a crewmember is integrated into a unit's ATP.

5-5.   The CTL is a written agreement between the commander and the crewmember. Commanders use DA Forms 7120-R, 7120-1-R, 7120-2-R, and 7120-3-R to inform crewmembers of their ATP requirements and to designate authorized flight duties, stations, and mission or additional tasks. A separate DA Form 7120-R series is required for each primary, additional, and alternate UA in which the crewmember performs duties. Crewmembers performing crew duties in multiple UA defined as similar may use a single DA Form 7120-R series for each instance. Operators are prohibited from performing maneuvers not listed on the CTL until trained and evaluated in that task by an SO/IO.

5-6.   Crewmembers are authorized to perform only those tasks listed on the CTL. Tasks not listed on the CTL will not be performed unless the commander has performed a risk analysis and briefed the crewmember on specific task(s) to be performed IAW chapter 3, and DA Form 7120-Series. A separate DA Form 7120-R is required for each aircraft not defined as similar by appendix A in which the crewmember is authorized to perform duties. The requirements established by the CTL are tailored to the proficiency training needs of the individual crewmember. Tailoring is completed using the results of the DA Form 4507 series that is completed during RL progression. Any tasks that received multiple "unsatisfactory" could require more iterations on DA Form 7120-1.

5-7.   The DA Form 7120-R is an active document (figure 5-3, page 5-4). As such, commanders may amend the DA Form 7120-R and associated enclosures throughout the crewmember's ATP training year. An event that establishes or changes requirements on the forms will be annotated by entering the date and a brief description of that event in the first, logical remarks section of the forms. Make the associated individual change(s) as necessary throughout the DA Form 7120-R and its enclosures. The ATP commander must then place their initials next to the event to certify approval of the subsequent change(s). Some events require several individual changes to the CTL; when this occurs, **do not** initial each change, only the event entry in the Remarks section that caused the changes. Units are only required to initiate a new DA Form 7120-R when—

- The crewmember is integrated into the unit's ATP. Only the crewmember's biographical data in Part 1 and authorized flight duties/stations in Part 2 are required to be filled out. The DA Form 7120-R is the commander's authorization for the crewmember to perform flight duties in the designated stations for the purposes of training, and will be signed by the commander and crewmember prior to the crewmembers first flight.
- The crewmember begins a new ATP training year.
- Amending the existing DA Form 7120-R is impractical. Clearly mark the amended copy on the top of the form as "Amended Copy." Retain the unusable DA Form 7120-R with the amended 7120-R through its final disposition.

Note. A new DA Form 7120-R is not required for initial readiness level (RL) 1 designation. Once designated RL 1, the changes made to the CTL will be initialed by the ATP commander and explained on the DA Form 7120-R remarks or DA Form 7120-3 as required. If a change in unit command occurs during the ATP year, the existing DA Form 7120-R and all enclosures remain in effect until the new form is initiated.

Note. The commander will ensure the crewmember has been briefed on any change to ATP requirements. Updating administrative data, rank changes, and spelling errors, and date errors **do not** require the commander's initials.

COMMANDER'S TASK LIST
For use of this form see TC 3-04.11; the proponent agency is TRADOC.

PART I. BIOGRAPHICAL

Name: Chapel, Billy | Rank: SSG | PID: CAFRS ID | Birth Month: JUN | FAC: 1

Duty Title: Instructor Operator | Aircraft Type: MQ-1C UAS | ☑ Primary ☐ Additional ☐ Alternate

PART II. AUTHORIZED FLIGHT DUTIES/STATIONS

	PI	PC	UT	IP	SP	IE	MP	FCP	ME	XP	CE	FE	FI	SI	AO	MO	OR	Remarks
Right/Back Seat	☑	☑		☑														P Seat
Left/Front Seat	☑	☑		☑														A Seat
Other Station																		Designated AC 13 APR 12
NVG																		Designated I/O 29 AUG 12
NVS																		PI=AO PC=AC IP=IO SP=SO

PART III. FLYING-HOUR REQUIREMENTS

	Annual	First Period	Second Period	Remarks/Adjustment
Dates		JUL 11-DEC 11	JAN 12-JUN 12	
Total Aircraft Hours		10	12	Prorated-RL on 10 OCT 11
Total Simulator Hours		20	24	
Night Unaided Hours				
NVG Hours				
Hood/Weather Hours				
Other Hours (Specify)				
Other Hours (Specify)				

PART IV. EVALUATION REQUIREMENTS

	Designated Period (AC/USAR) or Qtr (ARNG)	Remarks/Date Completed
Standardization Flight Evaluation	APR 12-JUN 12	30 Extension Approved/SAT 11 JUL 12
Instrument Flight Evaluation	APR 12-JUN 12	30 Extension Approved/SAT 15 JUL 12
Operator's Manual Written Examination	APR 12-JUN 12	96% SAT/10 MAY 12
NVG Flight Evaluation		
Maintenance Test Flight Evaluation		
Other (Specify) CBRNE	20 JUL 11-JUN 12	SAT 3 NOV 11
Other (Specify)		

PART V. ENCLOSURES

1. DA Form 7120-1-R (Crew Member Task Performance and Evaluation Requirements)
2. DA Form 7120-2-R (Crew Member Task Performance and Evaluation Requirements Continuation Sheet)   ☑ Yes ☐ No
3. DA Form 7120-3-R (Crew Member Task Performance and Evaluation Requirements Remarks and Certification)
4. Other (Specify)
5. Other (Specify)

PART VI. CERTIFICATION

This form, its enclosure(s), and the aircrew training manual establish your Aircrew Training Program requirements.

Commander: Ebby Calvin | Signature: | Date: 21 JUL 2011

I certify that I have read and understand my ATP requirements contained on this form, its enclosure(s), and the aircrew training manual.

Crew Member's Signature: | Date: 22 JUL 2011

DA FORM 7120-R, DEC 2009   PREVIOUS EDITIONS ARE OBSOLETE.   APD LF v1.01.ES

Figure 5-3. Sample DA Form 7120-R

DEPARTMENT OF THE ARMY FORM 7120-R INSTRUCTIONS

5-8.   Instructions for completing DA Form 7120-R are shown in the following paragraphs.

   a.   **Part I. Biographical.**

   (1)   **Name.** Enter the UACs name (last, first, middle initial).

   (2)   **Rank.** Enter the crewmember's rank.

   (3)   **Personnel identifier (PID).** The UACs PID is a unique identification code used by the CAFRS known as the Electronic Data Interchange-Personal identifier (EDI-PI). Use of the UACs social security number (SSN) or portions of the crewmember's SSN (WL1234) is prohibited.

Note. In the event that CAFRS is not yet fielded in the current flight operations section the crewmember is assigned to, leave the PID block blank or use the CAFRS PID from the crewmember's previous unit.

Note. The PID generated by CAFRS is not to be confused with the PID used with the unit level logistics system-aviation (enhanced) that incorporates the crewmembers initials and a portion of their SSN.

 (4) **Birth month.** Enter the crewmember's birth month.

 (5) **FAC.** Enter the flight activity category for the position the UAC is assigned. This block is not applicable for DACs.

 (6) **Duty title.** Enter the crewmember's primary duty title (for example, company standardization operator).

 (7) **Aircraft type.** Enter the modified mission, mission type, design, and series (MQ–1C or RQ-7B) for which the DA Form 7120-R applies. Place an "**X**" in the appropriate box to show that this is the crewmember's primary, additional, or alternate aircraft. Other aircraft within a series, defined as being similar, in which a crewmember is authorized and expected to perform duties will be listed on the DA Form 7120-3-R.

b. **Part II. Authorized flight duties/stations.** Place an "**X**" in the appropriate blocks to show the authorized crewmember duties. Explain any authorization to perform observer duties in the remarks column.

 (1) **Right/back seat**. Place an "**X**" in the authorized crew duty for that position.

 (2) **Left/front seat**. Place an "**X**" in the authorized crew duty for that position.

 (3) **Other station**. Place an "**X**" in the authorized crew duty for a station other than described above. If the duty station is other than the aircraft cabin or if further description of the cabin duty station is desired, specify that station in the remarks section of Part II (portable GCS).

 (4) **Night vision device** (NVD). Leave blank "it does not apply."

 (5) **Remarks.** Enter sufficient remarks to explain changes made to designated crew duties and or duty stations after this forms initiation.

c. **Part III. Flying-hour requirements.** Individual flying hour requirements are derived from appendix A and broken down into three segments: annual (annual flying hour requirements) or first period and second period (semi-annual flying hour requirements). Compute training period inclusive dates for the appropriate condition-initial designation or annual designation. See the following examples:

 (1) **Initial designation.** Initial designation is when a crewmember is first designated RL 1 or FAC 3 after integration into the unit's ATP.

 (2) **Annual.** When initially designated RL 1 or FAC 3 (or RL 2 for ARNG crewmembers), the annual training period will begin that day and end the last day of the crewmember's birth month (leave blank).

Note. Only the month and year are required for all training period end dates; the last day of the month is assumed.

Example	
Crewmember Birth Month	July
Designated readiness level (RL) 1 (RL 2 for Army National Guard (ARNG)	17 October 11
Annual Training Period	17 October 11 to July 12

- **First period.** The first training period is normally the first 6 months of an individual's annual training period. If initial designation occurs during the normal first period, the first training period will be from that date through the end of the first semi-annual period. If the crewmember

is designated RL 1 during the second training period, leave the date blocks blank in the first training period.

Example	
Crewmember Birth Month	July
Designated RL 1 (RL 2 for ARNG)	17 October 11
First Training Period	17 October 11 to January 12

- **Second period**. The second training period is normally the last 6 months of an individual's annual training period. Since initial designation in this case was during the normal first period, the individual will have a complete second training period.

Example	
Crewmember Birth Month	July
Designated RL 1 (RL 2 for ARNG)	17 October 11
Second Training Period	February 12 to July 12

- **Annual designation.** Annual designation is the initiation of a new DA Form 7120-R after the crewmember's annual closeout.
  - **Annual.** The first day of the month following the individual's birth month through the end of the crewmember's next birth month and year (leave blank).

Example	
Crewmember Birth Month	July
Annual Closeout	31 July 11
Annual Training Period	August 11 to July 12

  - **First period.** The first day of the month following the individual's birth month, through the end of the sixth month following the birth month.

Example	
Crewmember Birth Month	July
Annual Closeout	31 July 11
First Training Period	August 11 to July 12

- **Second period.** The first day of the seventh month following the individual's birth month, through the end of the next birth month and year.

Example	
Crewmember Birth Month	July
Annual Closeout	31 July 11
Second Training Period	February 12 to July 12

- **Total aircraft hours.** Determine the number of whole months remaining in the semi-annual period in which designated RL 1 (or RL 2 for ARNG crewmembers). Multiply the number of whole months in the training period times one-sixth of the semi-annual requirement.

Example	
Birth Month	July
Designated RL 1 FAC 1	17 October 11
First Period	3 months = 3 (1/6 x 12) = 6 hours
Second Period	6 months (12 hours)

- **Simulator hours.** Determine the number of whole months remaining in the training period in which designated RL 1. Multiply the number of whole months remaining in the training period times one-sixth of the semi-annual requirement or one-twelfth of the annual requirement as appropriate.

Example	
Birth Month	July
Designated RL 1 FAC 1	17 October 11
First Period	3 months = 3 (1/6 x 24) = 12 hours
Second Period	6 months (24 hours)

- **Condition specific hours.** Enter the flying hours required under specific conditions as required by appendix A or Army command/local directives (CBRNE hours). The commander may specify other condition specific aircraft flying hour requirements in the bottom two blocks of Part III.

d. **Part IV. Evaluation requirements.** In the "Designated Period" column, enter the designated 3-month period in which the crewmember must complete each applicable evaluation listed. Use the Remarks/Date Completed column to annotate changes to evaluation requirements during the ATP training year and to record the date each evaluation is completed.

> *Note.* If the crewmember's evaluation requirements change during the ATP training year, enters the change in Part IV of the DA Form 7120-R and explain it in the Remarks/Date Completed column. The dates that the evaluations were completed also may be annotated in this column. If more space is needed, use the Remarks section of DA Form 7120-3-R.

e. **Part V. Enclosures.** DA Forms 7120-1-R, 7120-2-R, and 7120-3-R will be enclosure 1, 2, and 3, respectively. Check yes or no to indicate if DA Form 7120-2 is used. Commanders may add additional enclosures to this block but must specify the form number or title of the enclosure.

f. **Part VI. Certification.** Enter the commander's first name, middle initial, last name, rank, and branch. The commander will sign and date the form authorizing the crewmember to perform flight duties at the indicated crew stations prior to the crewmember's first flight. Authorized duty/station difference for similar aircraft will be specified on the DA Form 7120-3-R. If the crewmember is a company commander (ATP commander), the battalion commander will sign the certification block. When the crewmember is a battalion or brigade commander, the ATP commander will sign the certification block. The crewmember will sign and date the CTL to certify he or she has been briefed on and understands their authorized flight duties/stations and ATP requirements prior to the first flight. Upon initial RL 1 designation, the crewmember will be briefed on task iteration, flying hour minimums, evaluation requirements, and all other requirements incurred by this designation. For annual designation forms, the commander and crewmember will sign and date the CTL no later than the first day of the month following the crewmember's birth month.

DEPARTMENT OF THE ARMY FORM 7120-1-R INSTRUCTIONS

5-9. Appendix A specifies the minimum base task performance and evaluation requirements for the individual crewmember. It also details other mandatory base and mission task requirements for crewmembers, depending on circumstances such as their duty position, FAC, aircraft, and authorized flight duties. DA Form 7120-1-R details the base, mission, and additional task performance and evaluation requirements for each crewmember; therefore, commanders must ensure that all mandatory requirements for the crewmember are included. DA Form 7120-1-R (figure 5-4, page 5-8) details the base, mission, and additional task performance and evaluation requirements for each crewmember.

CREW MEMBER TASK PERFORMANCE AND EVALUATION REQUIREMENTS								
For use of this form see TC 3-04.11; the proponent agency is TRADOC.								
Name: Chapel, Billy		Aircraft: MQ-1C UAS			CBRN Requirements: ☑ Yes ☐ No			
Tasks	Day	Night	NVG	NVS	CBRN	Sim	TECH	Remarks
1001 Crew Mission Brief	3							
1004 Plan a VRF Flight	4							
1007 Plan an IFR Flight	2							
1010 Prepare a Perf Planning Card	5							
1022 Preflight Procedures	5				1E			
1024 Engine Start/Systems Checks	5				1			
1032 Radio Comm Procedures	5							
1034 Perform Aircraft Taxi	5				1			
1035 Perform ATLS Takeoff	5							
1045 Flight in Knobs Control	5							
1046 Dead Reckoning Navigation	2							
1048 Fuel Management Procedures					1			Added CTL CBRNE Task
1050 Flight Utilizing Auto Por Mod	5							
1071 React Systems Emergency								
1081 Perform ATLS Abort	3							
1086 Perform ATLS Landing	5				1			
1110 Track a Static Target	4							
1115 Track a Moving Target	4							
1116 conduct Recon Operations	2							
1122 Target Mark/Store Function	2							
1123 Config Comm Relay	2							
1139 Payload Opearional Checks	4							
1142 Digital Communication	2							
11 75 Transfer Procedures	3							
1802 After Landing Procedures	5				1			
MISSION TASKS								
2170 LOI with Cooperative Element	2							
2305 Operate SAR	3E							
2307 Operate GMTI	3E							

DA FORM 7120-1-R, DEC 2009   PREVIOUS EDITIONS ARE OBSOLETE.   APD PE v1.00

Figure 5-4. Sample DA Form 7120-1-R

- **Name.** Enter the crewmember's name (last, first, middle initial).
- **Aircraft.** Enter the aircraft as stated on the crewmember's DA Form 7120-R.
- **CBRNE requirements.** Mark appropriately based on the commander's (Colonel or above) determination of the unit's CBRNE requirements.
- **Tasks.**
  - Base task iteration and evaluation requirements are as established in appendix A (as are maintenance tasks for crewmembers designated to perform maintenance functions on the DA Form 7120-R) unless otherwise noted. To mandate evaluation or to increase iterations of specific base or maintenance tasks, enter the task number followed by the task title on the blank lines provided. Remaining base/maintenance tasks will be as established in appendix A.
  - Enter the mission or additional task number followed by the task title on the blank lines provided, if applicable.
  - Enter unit-specific requirements such as tactical scenarios or STXs after the last task. If more space is needed, use DA Form 7120-2-R.
  - If CBRNE training is required, task iteration and evaluation requirements are as established in appendix A. The ATP commander may add tasks, iteration and evaluation requirements to the minimums outlined in appendix A by following the instructions above for base tasks.

Note. Task titles may be abbreviated to fit within the space provided.

Note. For FAC 3 operators: List commander designated base task requirements on the DA Form 7120-1-R.

● Day, night, CBRNE, and simulation.
  ■ For each task listed, enter the number of times the crewmember must perform the task in the appropriate column.
  ■ Place an "**E**" next to the number (for example, 3E) in the appropriate column if the task is mandatory for annual evaluations.

Note. If the crewmember's task performance or evaluation requirements change during the ATP training year, enter the change on DA Form 7120-1-R and explain it in the Remarks column. If more space is needed, use the Remarks section on DA Form 7120-3-R.

  ■ Remarks. Use as required to fully explain changes, remarks, and or adjustments.

DEPARTMENT OF THE ARMY FORM 7120-2-R INSTRUCTIONS

5-10. Use DA Form 7120-2-R (figure 5-5) as necessary to list tasks or unit requirements when there is insufficient room on DA Form 7120-1-R.

CREW MEMBER TASK PERFORMANCE AND EVALUATION REQUIREMENTS CONTINUATION SHEET For use of this form see TC 3-04.11; the proponent agency is TRADOC.								
Name: Chapel, Billy		**Aircraft:** MQ-1C UAS			**Page** 2	**of** 2		
Tasks (continued)	**Day**	**Night**	**NVG**	**NVS**	**CBRN**	**Sim**	**TECH**	**Remarks**
2475 Cooperative Engagement	2							
2476 Airborne Data Relay Mission	1							
3008 Conduct Snow ATLS Landing								
Other Requirements								
Brigade STX	1							

DA FORM 7120-2-R, DEC 2009   PREVIOUS EDITIONS ARE OBSOLETE.   APD PE v1.00

Figure 5-5. Sample DA Form 7120-2-R

● **Name.** Enter the crewmember's name (last, first, middle initial).
● **Aircraft.** Enter the aircraft as stated on the crewmember's DA Form 7120-R.
● **Page.** Enter the DA Form 7120-2-R page number and total number of DA Form 7120-2-Rs.

DEPARTMENT OF THE ARMY FORM 7120-3-R INSTRUCTIONS

5-11. DA Form 7120-3-R (figure 5-6) is normally the last page of the CTL. It is used to document all additional/other training requirements prescribed by the commander as part of the crewmember's ATP.

<div style="border:1px solid black; padding:1em;">

CREW MEMBER TASK PERFORMANCE AND EVALUATION REQUIREMENTS
REMARKS AND CERTIFICATION
For use of this form see TC 3-04.11; the proponent agency is TRADOC.

REMARKS:

Kinsella, Ray   22 JUL 12

1. This is an unmanned aircraft systems (UAS) operator's record. For use of these forms the following symbols are defined below.
Seat: A-operator on aircraft control station; P-operator on payload control station.
Duty: AO-aircraft operator; AC-aircraft commander; IO-instructor operator; SO-standardization instructor operator.

2. Operator is auntorized to perform all tasks listed in the Aircrew Training Manaul (ATM), any mission tasks, and any additioanl task in any mode (electro-optical/infrared, Inst) provided you have reviewed the tasks, conditions, standards, and description prior to performing or evaluating the maneuver/task.

NOTE: Enter any pertinent remarks or additional ATP requirements not listed elsewhere in the 7120 series on this sheet.

ANNUAL TRAINING COMPLETED   DATE COMPLETED

3. Gunnery tables for all units with lasers/weapons   2 JUN 11

4. ACT-E sustainment training that is aligned with APART period   10 JUL 11

5. Annual ROC-V training according to unit SOP   1 DEC 11

6. Academic training according to unit SOP   21 JUN 11

7. Aeromedical training according to unit SOP   10 DEC 11

SAMPLE

CERTIFICATION:

I have/have not completed my ATP flying-hour, task performance, and evaluation requirements.

Crew Member's Signature: Ray Kinsella   **Date:** 13 AUG 12

DA FORM 7120-3-R, DEC 2009   PREVIOUS EDITIONS ARE OBSOLETE.   APD PE v1.00

</div>

Figure 5-6. Sample DA Form 7120-3-R

- a. **Name.** Enter the crewmember's name (last, first, middle initial).
- b. **Aircraft.** Enter the aircraft as stated on the crewmember's DA Form 7120-R.
- c. **Date.** For Annual designation forms, this date will be no later than the first day of the month following a crewmember's birth month. For Initial designation forms, this date will be the date that the crewmember is designated RL 1 or FAC 3.
- d. **Remarks.** Enter the crewmember's name (last, first, middle initial). Add the title of any periodic training task, recurring training and additional/other commander-designated training required as part of the ATP, but not listed on any other forms within the DA Form 7120-R-series.
- e. **Certification.** No later than the last day of a crewmember's birth month, closeout the DA Form 7120-R series by having the crewmember sign and date the DA Form 7120-3-R certification block. The crewmember circles the "have" portion of the statement if all ATP requirements have been met by that date. If all ATP requirements have not been met, the crewmember circles the "have not" portion of the statement. Crewmembers that circle the "have not" portion of the statement must be processed IAW AR 95-23, if applicable, and an

appropriate comment will be entered in the Remarks section explaining why the requirements were not met and when they will be completed.

Note. Example: If a waiver or extension of a specified requirement is granted and all remaining ATP requirements have been met, the crewmember will circle the "have not" portion of the "Certification" block.

Note. Example: If a crewmember is reassigned (PCS) before the end of their APART period or was unable to complete APART requirements due to a temporary medical suspension, circle the "have not" portion of the Certification block and provide a brief statement explaining the event in the DA Form 7120-3-R remarks area.

DEPARTMENT OF THE ARMY FORM 7122-R

5-12. DA Form 7122-R (figures 5-7 and 5-8, page 5-12) is used to permanently record crewmember evaluations and summaries of DA Form 4507-R (Crewmember Grade Slip). This form is also used to collect data during the year for input on the DA Form 759.

CREW MEMBER TRAINING RECORD

For use of this form see TC 3-04.11; the proponent agency is TRADOC.

Sheet No:

Name: Chapel, Billy PID: CAFRS ID Rank: SSG Birth Month: JUN

Date	A/C	Event	Duty	D	N	NG	NS	W	H	Sim	Seat	Recorded By	GR	CM Init	Rmk
20120202	-	Records initiated	-	-						-	-	R. Kinsella, SSG, IO	-		N
20120202	MQ-1C	Assigned	-							-	-	R. Kinsella, SSG, IO	-		Y
20120205		4186 Received-FFD	-	-						-	-	R. Kinsella, SSG, IO	-		Y
20120212	MQ-1C	Commander's evaluation /PFE	AO	2.0						-	A/P	R. Kinsella, SSG, IO	S		Y
20120218	MQ-1C	RL 1 progression training	AO	4.4						-	both	D. Hinson, SFC, SO	S		Y
20120223	MQ-1C	Gunnery table (GT) I.2	AO	-						-	P	R. Kinsella, SSG, IO	S		N
20120501	MQ-1C	CBRNE training	AO	1.2							A	D. Hinson, SFC, SO	S		Y
20120512	-	CBAT/ROC-V completed	-	-						-	-	R. Kinsella, SSG, IO	S		N
20120515	-	No-notice (written evaluation)	-	-						-	-	R. Kinsella, SSG, IO	S		N
20120602	-	Flight physical complete-FFD	-	-						-	-	D. Hinson, SFC, SO	-		N
20120610	-	Medical suspension	-							-	-	R. Kinsella, SSG, IO	-		N
20120612	-	-10 Exam								-	-	D. Hinson, SFC, SO	S		N
20120614	MQ-1C	ACT-E sustainment training complete								-	-	R. Kinsella, SSG, IO	S		N
20120617	MQ-1C	TDY-Instructor/Operator Course								-	-	R. Kinsella, SSG, IO	-		N
20120619	-	Events posted to DA 759		-						-	-	D. Hinson, SFC, SO	-		N
20120704	MQ-1C	Instructor/Operator Course completed	AC	-						55.9	A/P	R. Kinsella, SSG, IO	S		N
20120705	-	4186 Received-FFD	-	-						-	-	D. Hinson, SFC, SO	-		N
20120705	-	Request for extension	-	-						-	-	R. Kinsella, SSG, IO	-		Y
20120911	MQ-1C	No-notice PFE/RL3	AO	1.8						-	A/P	R. Kinsella, SSG, IO	U		Y
20120916	MQ-1C	PFE complete/RL 1	AO	2.9						-	A/P	D. Hinson, SFC, SO	S		Y
20121022	MQ-1C	IO standarization flight evaluation	IO	4.8						-	A/P	D. Hinson, SFC, SO	S		Y

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Figure 5-7. Sample DA Form 7122-R (Front)

Date	Remarks	Commander's Signature
20120202	Assigned to A Co. 2th ID, Fort Yankee Stadium, NY as a FAC 1 MQ-1C aircraft operator	
	paragraph 45, line # 107.	
20120205	Report to new duty station. Received DA Form 4186.	
20120212	Based on records review and PFE, recommend individual designated RL 1.	
20120218	Local area orientations completed.	
20120501	CBRNE training completed.	
20120705	Request 30-day extension for completion of APART flight evaluations due to medical	
	suspension. All other ATP requirements have been met. Approve: Y	Keyser Soze, LTC, AV, CDR
20120710	2012 APART completion.	
20120911	Unsatisfoactory evaluation due to failure to react to lost of link and lack of knowledge in	
	system limitation. Recommend individual be designated RL 3 for retraining. Approve: Y	Ebby Calvin, CPT, AV, CDR
20120916	Retraining completed. Satisfactory flight. Recommend individual be designated RL 1 status	
	Approve: Y	Ebby Calvin, CPT, AV, CDR
20121022	Satisfactorily completed I/O standardization evaluation. Recommend individual be placed on	
	unit I/O orders to perform I/O duties. Approved: Y	Ebby Calvin, CPT, AV, CDR

PAGE 2, DA FORM 7122-R, DEC 2009   APD PE v1.00

Figure 5-8. Sample DA Form 7122-R (back)

DEPARTMENT OF THE ARMY FORM 7122-R INSTRUCTIONS

5-13. Instructions for completing DA Form 7122-R are shown in the following paragraphs. General instructions are as follows:

- Type or clearly print all entries in black, dark blue, or red ink (for out of sequence date entries only).
- For blocks that **do not** require an entry, enter "**NA**" for not applicable or a dash (—).
- To make minor corrections, use correction fluid/tape or neatly line through the incorrect information and add the correct information. Use the procedures provided in this chapter to make major corrections.
- Keep entries as clear and concise as possible. Use standard abbreviations and acronyms.
- Significant related events that occur (i.e. aircraft qualification or IO course en-route) during the time a crewmember departs the previous duty station and is integrated into a new ATP will be entered on the DA Form 7122-R prior to the assignment entry.
- Not every possible event or occurrence can be anticipated. If situations arise that are not covered by these instructions, use sound judgment and enter the event in the most logical manner.
- DA Form 7122-R is a two-page form; however, it is likely that one page will fill before the other.
- When one page of the form is filled, close out the other page of the form by drawing a diagonal line from the first unused block to the last unused block.

5-14. Administrative and demographic data are as follows:

- **Sheet number.** Number each sheet in numerical order.
- **Name.** Enter the crewmember's full name (last, first, and middle initial). If reproducing the form on two separate sheets of paper, enter the crewmember's name on the first line of the second sheet, in the Remarks area, followed by the sheet number with which it corresponds.

- **PID.** Until further guidance leave this blank. The UACs PID is a unique identification code used by the CAFRS known as the EDI-PI. Use of the UACs SSN or portions of the crewmember's SSN (WL1234) are prohibited.
- **Rank.** Enter the crewmember's rank.
- **Birth month.** Enter the crewmember's birth month.

5-15. Training event data are as follows:

- **Date.** Enter the day, month, and year of the event. After the first entry, it is acceptable to omit the year until entry of the first event of the following year. If an entry is out of chronological order, **only the date** will be in red and the year must be included.
- **Aircraft.** Enter the alphanumeric designation of the aircraft or flight simulator (MQ–1C or MQ-5B). If the event was performed solely in a flight simulator, enter the flight simulator designation (MQ–1C SIM).
- **Event.** Enter a short summary of the event on one line. Record events listed below:
  - Unit assignments and reassignments. Reassignment within the unit not requiring a DA Form 759 closeout will be treated as a change of duty. FAC and MTOE paragraph and line number will be listed for TOE units.
  - Start and completion of time-limited training programs such as each level of RL progression or AC qualification. Start times may be implied by previous entry. Example: The date that a crewmember is qualified RL 2 starts the clock for Mission Training and sets the suspense for RL 1 designation.
  - Proration of flying-hour minimums at the end of the training period (see chapter 2 of this TC). Include justification and number of months prorated in entry remarks.
  - Placement on or removal from flight status.
  - Change of duty position (AC/UT/SO/IO designation), FAC, primary, alternate, or additional aircraft.
  - Completion of DA aviation-related qualification courses, both flying and nonflying.
  - All flight, oral, and written evaluations. Specify the type of evaluation; for example, no-notice evaluation, APART written evaluation, or proficiency flight evaluation.
  - Completion of all ATP requirements for each primary, additional and alternate aircraft as applicable.
  - Any nonmedical suspensions and their disposition.
  - All waivers or extensions of ATP requirements granted. Entries will specify the affected requirements and when applicable, the date the requirements must be completed. Crewmembers may be suspended from flight duties until completion of the commander's investigation and the extension or waiver is granted.
  - Completion of extension or waiver requirements.
  - Change in unit aircraft availability/non-availability status due to movement to deployment/redeployment or aircraft preset/reset. This entry is not required if aircraft non-availability does not result in the crewmember being granted a waiver, extension, or flying-hour proration.
  - Designation or removal of alternate or additional aircraft. Also, the addition or removal of similar aircraft to the listing on "Primary", "Additional" or "Alternate" aircraft DA Form 7120-R series forms.
  - Involvement in any Class A, B, or C accident or incident and the results of any post-mishap flight evaluation (if given).
  - Completion of significant training where DA Form 7122-R documentation is specifically directed in the program; for example, "Takeoff/ Landing Qualification complete (MQ-1)." Include the source of the training program requirements in the event remarks; for example, "Takeoff/landing qualification completed IAW Army and General Atomics Program of Instructions."

Note. Record the following additional events on the 7122-R. Completion of LAO (include times for Day and Night). Completion of required GT. Completion of ACT-E requirements. Completion of environmental training. Receipt of a "Broken Wing" award or flying-hour award for safety.

Note. **Do not** record the following events. Flights conducted solely to accomplish task iteration, flying-hour, or MOPP requirements. Attendance at recurring briefings (for example, safety meetings and weather briefings). Participation in ARTEP exercises or other unit-level exercises.

- **Duty.** If applicable, enter the appropriate duty symbol. This duty symbol reflects the purpose of the flight or event, not necessarily the DA Form 2408-12 (Army Aviator's Flight Record) duty. For example, a AC flight evaluation requires entry of the duty symbol "AO" on DA Form 2408-12 but on the DA Form 7122-R, the duty symbol entered would be "AC."
- The entries on the DA Form 7120-R, Part II, and DA Form 7120-3-R (if applicable) with the commander's signature/initials and date suffice for orders authorizing duty positions. An entry on DA Form 7122-R with the commander's signature will also suffice for orders authorizing duty positions.
- **Day, Night, Instruments, and Simulation.** Enter the time flown, in hours and tenths of hours, under the appropriate flight modes/conditions as required. Enter the time flown on any single flight event or the total hours flown in multi-flight training programs. The flight modes/conditions indicated normally will agree with the DA Form 2408-12 entry.
- **Seat.** Enter the crewmember's seat position, if appropriate, for the event (A or P).
- **Recorded By.** Evaluators, trainers, operations personnel and others when authorized by the commander will enter their first initial, last name, rank and duty position. If the event was an evaluation and someone is recording it other than the evaluator, record the evaluator's name in the remarks section.
- **Grade.** If the event was graded, enter an "**S**" (satisfactory) or a "**U**" (unsatisfactory). For an unsatisfactory evaluation, state the specific tasks the crewmember performed unsatisfactorily and any restrictions imposed due to the failure. Provide a recommendation to the commander for retraining and reevaluation.
- **Crewmember initials.** Brief the crewmember on the entry and ensure that the crewmember understands any change in status. Crewmembers will then initial this block. A crewmember's initials show that the crewmember is aware of the entry on the form and any remarks and understands any change in status. The crewmember will immediately initial any entry resulting in a change of status such as an unsatisfactory evaluation or a suspension. The crewmember will initial routine entries such as assignment to a unit or satisfactory evaluations, as soon as practical.
- **Remark.** Enter "Yes," "**Y**," "No," or "**N**" in this column to show whether comments are entered in the Remarks section regarding the entry. **Do not** enter "NA" in this column or leave it blank.
- **Remarks.** Record pertinent information not shown on the front of the form in this section. **Do not** restate information entered on the front of the form; for example, "This was a satisfactory AC evaluation." There is no single correct way of entering remarks. However, they should be clear, concise, and specific. When entering remarks, use standard abbreviations and acronyms or logical shortened words.
- Enter the date in the same format as the front of the form. After the date, enter pertinent remarks. If the remarks require more than one line, **do not** repeat the date on the second or subsequent line(s). Remarks include description of unsatisfactory tasks on an evaluation or an explanation of nonmedical suspensions from flight.
- Only the following events recorded on the DA Form 7122-R require the commander's signature:
  - Nonmedical suspension.
  - RL designation after failure of a hands-on performance test or a training deficiency.
  - Extensions or waivers.

■ Return to previous duties after nonmedical suspension or RL designation after failure of a hands-on performance test or a training deficiency.

Note. The commander, pertaining to the IATF, is defined as the commander responsible for the ATP. Waiver and extension authority is IAW AR 95-23, local regulations, and SOPs. The appropriate commander will sign the DA Form 7122-R, page 2, when required. Memoranda for Record granting extensions or waivers signed by the commander will be retained in the miscellaneous section of the IATF until the end of the ATP year when the waiver or extension is annotated on the DA Form 759 closeout.

● Corrections to DA Form 7122-R may be needed for several reasons. Careful and timely entering of events as they occur will eliminate the need for corrections.
   ■ Out of sequence events. If an event is not entered at the proper time and one or more events have been recorded, enter the event as you would any other event on the next available line. Use red ink when entering the date only (to include year) for the out-of-sequence event.
   ■ Unusable form. If enough mistakes accrue to make the form unusable, transcribe the data to a new form. Place a diagonal line across the front of the unusable form, label it "transcribed," and retain this copy of the form (**permanently**) under the current form.

Note. **Do not** destroy or discard any DA Form 7122-R that contains an entry.

DEPARTMENT OF THE ARMY FORM 4507-R

5-16. The DA Form 4507-R (Crewmember Grade Slip) series forms will be filed on the right side of the IATF until completion of the training and the event has been documented on the DA Form 7122-R, as in figure 5-9, page 5-18. Once the event has been entered on the DA Form 7122-R, the DA Form 4507-R series will be removed from the IATF.

DEPARTMENT OF THE ARMY FORM 4507-R INSTRUCTIONS

5-17. Instructions for completing the form are as follows (figure 5-9, page 5-16):

CREW MEMBER GRADE SLIP

For use of this form see TC 3-04.11; the proponent agency is TRADOC.

Name: Chapel, Billy		Rank: SSG	PID: CAFRS ID
Unit: A Co. 2th ID		Purpose: RL progression	
Aircraft Type: MQ-1C	Date Started: 12 FEB 2012	Must Complete By: 11 MAY 2012	

Flight Data	Date									
	12 Feb 2012	18 Feb 2012	18 Feb 2012	23 Feb 2012						
Time Today	2.0	1.9	2.5	1.8						
Cumulative Time	2.0	3.9	6.4	8.2						
Day Flight--Today (EO/IR)	1.5	1.2	1.0							
Day Flight--Cumulative	1.5	2.7	3.7							
I Flight--Today	.5	.7								
I Flight--Cumulative	.5	1.2								
N Flight--Today			1.5							
N Flight--Cumulative			1.5							
SM Flight--Today				1.8						
SM Flight--Cumulative				1.8						
Duty Position	AO	AO	AO	AO						
Seat Position	A	A	P	P						
Overall Grade	S	S	S	S						
Crew Member Initials	BC	BC	BC	BC						
Trainer or Evaluator Name, Rank, and Duty Position	D. Hinson SSG/IO	R. Kinsella SFC/SO	R. Kinsella SFC/SO	D. Hinson SSG/IO						

DA FORM 4507-R, DEC 2009   PREVIOUS EDITIONS ARE OBSOLETE.   APD PE v1.00

Figure 5-9. Sample DA Form 4507-R

- **Name and rank.** Enter the crewmember's name (last, first, middle initial) and rank.
- **PID.** Until further guidance leave this blank. The UACs PID is a unique identification code used by the CAFRS known as the EDI-PI. Use of the UACs SSN or portions of the crewmember's SSN (WL1234) are prohibited.
- **Unit.** Enter the unit to which the crewmember is assigned.
- **Purpose.** Enter the purpose of the training or evaluation using standard phraseology; for example, refresher training or AC evaluation.
- **Aircraft type**. Enter the alphanumeric designation of the aircraft or flight simulator; for example, RQ-7B, MQ–1C.
- **Date started.** Enter the date on which the flight training program starts.

- **Must complete by.** If the training program is time limited, enter the date on which the crewmember must complete it. If the date changes, line through the original date and enter the new date above it. Explain the change in the Comments section.
- **Date.** Enter the day, month, and year of the flight.
- **Flight data.** This form provides a cumulative record of the time flown under those flight modes normally requiring minimum amounts. Record all flight time in hours and tenths of hours.
- **Time today.** Enter the total time flown today.
- **Cumulative time.** Record the total flight time accrued to date.
- **Day Flight-Today.** Enter the time flown today under day flight conditions. For flights conducted under other than day flight conditions, enter the applicable flight mode or condition in the space provided. Then record the time flown today for that flight mode or condition.
- **Day flight-cumulative.** Record the total time accrued under day flight conditions. For flights conducted under other than day flight conditions, enter the applicable flight mode or condition in the space provided. Then record the total flight time accrued to date for that flight mode or condition.
- **Duty position.** Enter the crewmember's duty position for the flight.
- **Seat position.** Enter the crewmember's seat position for the flight.
- **Overall grade.** Enter either "S" or "U" in the overall grade block after the crewmember completes the flight. This grade reflects the evaluator/trainer's overall assessment of the flight. If the overall flight is graded a "U", a comment is required on DA Form 4507-2-R.
- **Crewmember initials.** Have the crewmember initial the grade slip to certify that the crewmember has been debriefed. The initials **do not** mean that the crewmember agrees with the results.
- **Trainer or evaluator name, rank, and duty position.** Enter the trainer's or the evaluator's first initial, last name, rank, and duty position.
- **Comments.** Enter pertinent comments on DA Form 4507-R or, if more space is required, on DA Form 4507-2-R. Enter the date of the flight and sound, objective comments. If the overall flight, or any individual task is graded "**U**", a comment is required. For unsatisfactory tasks, indicate which standards were not met and any other appropriate remarks. These comments are important for reference by other trainers or evaluators during future training or evaluation.

DEPARTMENT OF THE ARMY FORM 4507-1-R INSTRUCTIONS

5-18. Instructions for completing the form are as follows (figure 5-10, page 5-18):

MANEUVER/PROCEDURE GRADE SLIP
For use of this form see TC 3-04.11; the proponent agency is TRADOC.

Trainee's/Examinee's Name: Kinsella, Ray

S E L E C T	Page No. 1 No. Pages 2		DATE									
	MANEUVER/PROCEDURE		12 Feb 12	18 Feb 12	23 Feb 12							
	1001 Crew Mission Brief		S	S	S							
	1004 Plan a VRF Flight		S									
	1007 Plan an IFR Flight			S								
	1010 Prepare a Perf Planning Card		S	S								
	1022 Preflight Procedures		S	S								
	1024 Engine Start/Systems Checks		S	S	S							
	1032 Radio Comm Procedures		S	S								
	1034 Perform Aircraft Taxi		S	S	S							
	1035 Perform ATLS Takeoff		S		S							
	1045 Flight in Knobs Control		S	S	S							
	1046 Dead Reckoning Navigation		S									
	1048 Fuel Management Procedures		S	S	S							
	1050 Flight Utilizing Auto Flight Mode		S	S	S							
	1071 React to System Emergency		S	S								
	1081 Perform ATLS Abort			S								
	1086 Perform ATLS Landing		S	S	S							
	1110 Track a Static Target		S	S	S							
	1115 Track a Moving Target		S	S	S							
	1116 Conduct Recon Operations		S	S	S							
	1122 Target Mark/Store Function		U	S	S							
	1123 Config Communication Relay		S	S								
	1139 Payload Operational Checks		S	S								
	1142 Digital Communication		S	S								
	1175 Transfer Procedures		S	S								
	1254 Perform Instrument Flight		S	S								
	1416 Perform Weapon Initialization Procedures				S							
	1458 Engage Target w/Point-Target Weapon Sys				S							
	1802 After Landing Procedures		S		S							

DA FORM 4507-1-R, DEC 2009   PREVIOUS EDITIONS ARE OBSOLETE.   APD PE v1.00

Figure 5-10. Sample DA Form 4507-1-R

- **Examinee's name.** Enter the examinee's name (last, first, middle initial).
- **Page no.** Enter the number of this page.
- **No. pages.** Enter the total number of DA Forms 4507-1-R used.
- **Date.** Enter the day, month, and year of the flight. It is acceptable to have multiple entries for the same date to specify tasks trained/evaluated in different flight modes. In the blocks under the date, the evaluator/trainer or unit trainer grades each task performed. An unsatisfactory grade "U" requires a brief description of the deficiency in the comments section of DA Form 4507-2-R. Place a diagonal (/) in the grade blocks for all maneuvers or procedures not performed. When three or more consecutive tasks are not graded, place a diagonal line in the first and last task and connect the two with a straight vertical line.
- **Maneuver/procedure.** Enter the task number followed by the task title as required by the unit's ATP. Units may list all tasks required by the commander's task list. Another option is to develop separate forms for each training program; for example; NVD refresher training, RL progression,

and mission training. Units may also use a highlighter pen or any other suitable method to track completion of tasks.

Note. Task titles may be abbreviated to fit within the space provided.

- **Select.** If the form is tailored to the training or evaluation being conducted, use as desired. If the form lists all base and mission/additional tasks, place an "**X**" in the selection column by each task that is mandatory for the training program or evaluation underway based on the guidance in this TC and its appendix A; the CTL, the unit SOP, and other documents.

DEPARTMENT OF THE ARMY FORM 4507-2-R INSTRUCTIONS

5-19. The DA Form 4507-2-R (figure 5-11, page 5-20) is used to record comments and explain DA Form 4507-R and DA Form 4507-1-R entries, as appropriate.

CONTINUATION COMMENT SLIP

For use of this form see TC 3-04.11; the proponent agency is TRADOC.

Examinee's/Trainee's Name: Kinsella, Ray

Date	Comments
12 Feb 2012	Individual had difficulty with different ways of marking targets and showing location where targets are normally stored. Remedial training was performed upon completion of Checkride. SSG Kinsella will re-evaluate during RL progression evaluation.
	D. Hinson SSG/IO

DA FORM 4507-2-R, DEC 2009   PREVIOUS EDITIONS ARE OBSOLETE.   APD PE v1.00

Figure 5-11. Sample DA Form 4507-2-R

- **Examinee's name.** Enter the examinee's name (last, first, middle initial).
- **Date.** Enter date of entry.

a. **Comments.** Enter comments as necessary. Comments should be clear, concise and objective. These comments are important for reference by other trainers or evaluators during future training or evaluation.

Chapter 6

Risk Management

GENERAL

6-1.   Tough, realistic training, conducted to standard, is the cornerstone of Army warfighting skills. The battle-focused training environment places stress on both Soldiers and their equipment, creating a high potential for loss. As training realism increases, so does the potential for loss. If risk is not reduced, personnel and equipment losses, caused by training mishaps, pose a serious drain on warfighting assets. Accidental losses in training are no different from combat losses; the assets are gone. Commanders must find ways to protect individuals and equipment from accidents during realistic training to prepare for war. Guidance on risk management is contained in ADP 5-0, ATP 5-19, and AR 385-10.

6-2.   An effective risk management program is vital at all levels of aviation operations and requires the personal attention and participation of unit commanders and leaders up and down the chain. The protection of aviation Soldiers and their weapon systems is a way of life in the aviation business. An effective ATP, well thought out and planned in conjunction with appropriate regulations and guidance, is arguably the most important factor in any unit's safety program once embraced by every Soldier in the unit. Flying "by the book" does not hinder, but actually enhances a unit's battle focus. The crawl, walk, run approach to training is imperative to risk reduction, as is the active participation of commanders at all levels of the training process.

RISK MANAGEMENT CONCEPT

6-3.   Risk management is the decision-making process for identifying hazards and mitigating risks across the entire spectrum of Army missions, functions, operations, and activities. It is a holistic assessment blending tactical and threat-based risk management with accidental, hazards-based risk management. Risk management is not a stand-alone process, a paper-work drill, or an add-on feature to planning. Rather, it is used as a fully integrated element of planning and decision making. It may also be executed intuitively in situations that require hasty planning or immediate action. Risk management should be viewed as part of the military art interwoven throughout the Army's military decision making and training management cycles. Risk management follows a process that personnel of all ranks must continually use.

6-4.   Using the risk management process, leaders identify the hazards that may cause mission degradation and loss of unit combat readiness and effectiveness. These include those hazards that may cause injury and/or death to personnel or damage and/or destruction of equipment. A commander should then determine the possible impact of each hazard on the mission, take action to minimize or eliminate the hazards, then execute the mission or modify the mission to reduce risk further.

6-5.   Risk management is not a restrictive measure. It is a conscious analysis of the mission itself, possible courses of action, and the implementation of appropriate controls to ensure any risk is reduced or eliminated.

6-6.   The risk management process includes several terms all leaders should know (table 6-1, page 6-2).

Table 6-1. Risk management terms and definitions

Term	*Definition*
Risk management process	The process of identifying and controlling hazards to protect the force.
Control	Any action taken to eliminate hazards or reduce their risk.
Hazard	Any real or potential condition that can cause the loss of an asset. These losses include injury, illness, and death of personnel; damage to or loss of equipment or property; and mission degradation.
Risk	The chance of hazard or bad consequences. Exposure to a chance of injury or loss. Risk level is expressed in terms of hazard probability and severity.
Exposure	The frequency and length of time subjected to a hazard.
Probability	The likelihood that an event will occur.
Severity	The expected consequence of an event in terms of the degree of injury, property damage, or other mission impairing factors that could occur.
Risk assessment	The identification and assessment of hazards.
Residual risk	Any anticipated level of risk remaining after controls have been identified and selected for hazards that may result in loss of combat power.
Risk decision	Accept or not accept the risk(s) associated with an action; made by the commander, leader, manager, or individual responsible for performing that action.

6-7.   The standard for risk management is leadership at the appropriate level of authority making informed decisions to control hazards or accept risks. Leaders are responsible and accountable for assessing their operation as a total system.

6-8.   The degree of risk determines the level of decision authority. When resources to reduce risk to an acceptable level are not available, the risk issue must be elevated to the next higher command. This process continues until the information is presented to the level of command that has the resources and authority to eliminate the hazard or control the risk to an acceptable level. In this manner, a conscious and informed decision is made to either commit the resources to control the hazards or to accept the risk.

RESPONSIBILITIES

6-9.   Risk management is not complex, technical, or difficult and is not limited to the brigade and battalion commanders. It is a simple decision making process and a way of "thinking through a mission" to balance mission demands against known risks. Trainers/evaluators can maintain realism in training accomplishment thorough risk management. In peacetime, the process must be deliberate, continuous, and must become second nature to those responsible for planning, approving, or leading activities. In combat, the process is no less deliberate, though risks may be accepted as dictated by the mission priority.

LEADERS

6-10. What is the commanders responsibility, at all levels? Who establishes what risk: extremely high (**E**), high (**H**), medium (**M**), or low (**L**)? Managing risks are a leadership responsibility. At the crewmember level, ACs and instructors/ evaluators are the principal risk managers. Planning must incorporate consideration for known hazards and must address appropriate control measures to minimize exposure to these hazards. While risk management is introduced in the planning phase of a mission, for ACs, risk management responsibilities are not complete until the mission debriefing is complete. To meet these responsibilities, leaders—

- **Do not** accept unnecessary risk. If the risk can be eliminated or reduced and the mission can still be accomplished, the risk is mitigated and acceptable. Find ways to mitigate the risk (for instance, change the crew mix, change the mission execution time, provide additional

preparation and training, and add additional supervision) that will still allow completion of the mission. Once hazards are identified and controls recommended, compare and balance the residual risk against the mission expectation.

- Pre-mission. The commander, or other designated risk approval authority, decides whether the controls are sufficient to accept the risk. If the risk is excessive, the commander can direct additional control measures, modify controls, request the next higher commander's involvement, or reject the mission.
- During mission execution. The commander cannot always be available to make every risk decision. While operating the aircraft when the situation, time, or other factors **do not** allow for the commander's decision, the MC, AC, instructors/evaluators, or other unit leaders become the primary risk managers. In such cases, unit leaders should use the commander's guidance, personal professional experience, unit SOP, TCs, regulations, current situation, and developing conditions as the basis on which control measures are formulated.
- The AC should evaluate unexpected hazards that are encountered during the course of the mission and apply the appropriate control measures.

- Make risk decisions at the proper level. Decisions made at the proper level eliminate the involvement of commanders not normally involved in the mission or commanders not authorized to accept the level of risk. ACs must know the appropriate level of approval authority based on the level of risk. The risk approval authority will vary between units and risk approval authority must at all levels be capable of mitigating risk or accepting that level of risk.

- Weigh the risks versus the benefits. The benefits gained by accepting a residual risk must clearly outweigh the potential cost in terms of life, limb, or equipment loss should an incident occur.

- Identify controls. The commander will issue guidance regarding the appropriate control measures. Once the controls are identified, ACs must ensure these controls are understood and implemented during the mission.

  - The crew mission briefing is where the AC presents these controls to the crew. The delineation of duties, such as airspace surveillance responsibilities, is an example of a hazard control established before flight.
  - The unit SOP is a formal document of risk management controls. These controls are only effective when followed. "IAW the SOP" is a valid control measure only when all crewmembers are knowledgeable of the unit SOPs contents. Flight weather minimums are a good example. If the SOP requires VFR minimums for a night training flight, the commander must reinforce and support the ACs decision to abort a mission, divert, or land the aircraft when conditions fall below these standards. Pre-mission planning should include options/controls for this example.
  - Crew coordination is a method of "on-the-fly" risk management by identifying unexpected hazards, establishing control measures, and evaluating these hazard controls continuously during the conduct of a mission.

- Integrate risk management into all stages of all operations. Integration begins with the pre-mission planning and continues through the completion of the mission debriefing. Consider risk management as contingency planning. The commander and staff should look at factors that could cause the mission to fail (cause loss of life, limb, or equipment) and implement controls to minimize that probability. During the debriefing, unexpected hazards for a completed mission then become expected hazards for follow-on missions.

STAFF

6-11. While crewmembers are not specifically members of the unit staff, they normally provide input to the battalion staff through their company commander. During operations, the staff normally does not occupy a crew station, but through their work, a significant portion of risk management does occur before any start switch is pressed. Some functions that the staff performs, relative to risk management, are as follows:

- Assist in the planning and identification of hazards for operations.

- Integrate risk management into operations plans and orders. In developing plans, the staff evaluates the risks, recommends controls to minimize the risks, and provides the commander with an assessment of the effectiveness of the imposed controls. In training situations, the staff—
  - Advises the commander of the controls that impact on training realism so the commander can make the risk acceptance decision.
  - Evaluates imposed safety restrictions to ensure optimal training benefit is achieved without unnecessary restrictive measures applied.
- Assess the operational risk. Using mission, enemy, terrain and weather, troops and support available, time available, and civil considerations factors to identify the risk to mission accomplishment, the staff begins to assess operational risks. The most important consideration is the outcome of the operation for the unit, higher headquarters, and adjacent units. Risk analysis is formulated using a course of action that is developed along the spectrum of frequent to seldom event occurrence. The staff reviews and expands or refines the list throughout the planning and execution of the exercise. The staff then evaluates the possible consequences of those risks from catastrophic to marginal. For example, the staff plans a multi-aircraft mission to airlift personnel or supplies. If the weather forecast is for marginal conditions, part of the planning should include the possibility of weather conditions degrading during the mission.
- Controls the staff might propose are—
  - Reinforcing those sections of the SOP pertaining to adverse weather.
  - Briefing crews regarding the current and forecast adverse weather and the possible courses of action selected by the commander.
  - Planning alternate transportation.
  - Designating landing airfields.
  - Practicing inadvertent instrument meteorological condition (IIMC) recovery.
- The staff should also consider the possibility of additional personnel or equipment showing up for transport than were expected. How will the crews accommodate this change? What impact will the additional payload have on the aircraft performance? Controls could include maximums on payload, additional sorties, backup aircraft, or other controls that would ensure mission accomplishment with minimum risks.

SAFETY OFFICER

6-12. The safety officer—
- Is an integral part of the risk management, planning process.
- Advises the commander and staff on safety requirements and recommends controls to minimize risks.
- Participates in all phases of the military decision-making process to ensure risk management follows the commander's intent.
- Assists all staffs in integrating the risk management process into other staff functions.
- Assists the command in supervising operations to ensure application and adherence to imposed controls and provides feedback on the effectiveness of the program.

CREWS

6-13. Crewmembers are a critical part of the risk management process. They perform the mission, and their involvement in the planning phase is crucial to identification of hazards and controls. Crewmembers must clearly understand the controls implemented to mitigate risks. During mission execution, crewmembers must perform tasks and implement control measures to standard. The employment of good crew coordination is paramount to identifying unexpected hazards (for example enemy situation, wires, and weather) and such employment continuously refines controls during the mission.

INDIVIDUALS

6-14. Self-discipline is critical to mission accomplishment and to an effective risk management program. The best risk management plan is worthless if the individuals performing the mission **do not** adhere to established controls or **do not** perform the tasks to standard. Individuals performing a mission are also responsible for performing risk management. While performing the mission, conditions change, hazards change, risks change, and, by necessity, risk management controls may change. The individual must constantly assess the conditions and continuously apply the principles of risk management to ensure minimum risk to themselves, fellow Soldiers, the aircraft, and the mission.

RISK MANAGEMENT TRAINING

6-15. Commanders must conduct risk management training for their unit. Training should emphasize the process and must reinforce the philosophy that Soldiers—crewmembers and ground personnel—are responsible for performing risk management; without a full range of participation, commanders may not make an informed decision.

RISK MANAGEMENT PROCESS

6-16. The following steps encompass the risk management process (figure 6-1).
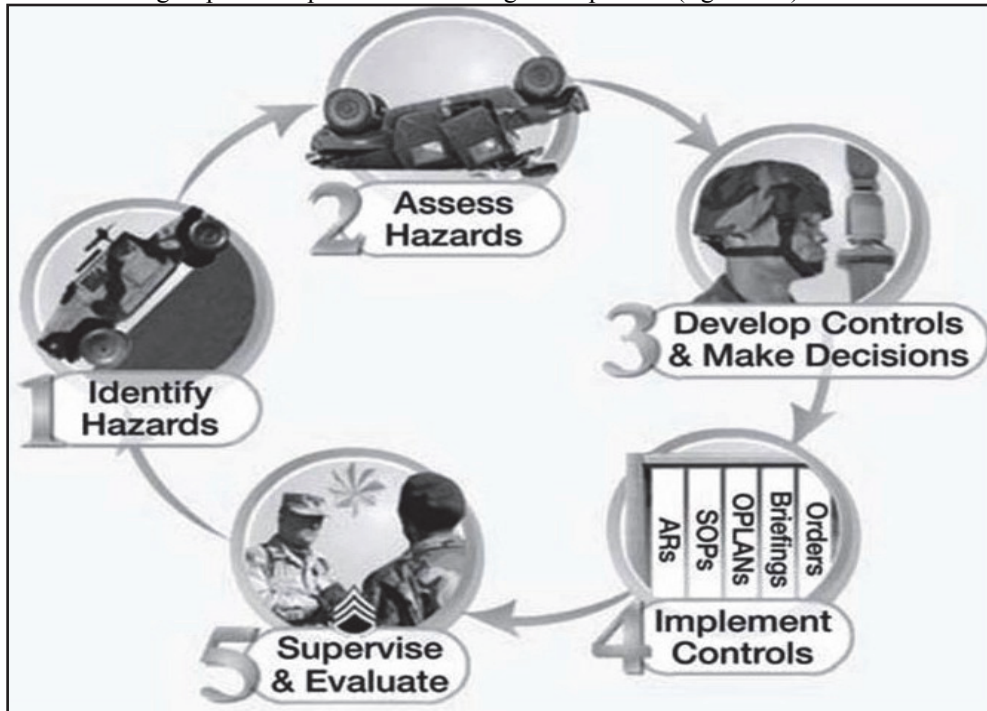
Figure 6-1. Risk management steps

STEP 1-IDENTIFY HAZARDS

6-17. Identify the major events in the mission and list chronologically. This will help identify all hazards associated with the specified as well as implied tasks.

6-18. Complete a preliminary hazard analysis of operational events. This identifies, as early as possible, the obvious hazards expected during the mission. Early identification provides more flexibility in addressing the hazards and allows more options for controls, which maximizes a leader's ability to complete the mission.

STEP 2-ASSESS HAZARDS

6-19. Determine the level of risk associated with each hazard. Commanders should ask, "Can the hazard result in a fatality, damage to equipment, or mission failure?" The degree of risk associated with each particular hazard will help define the level of controls necessary. For example, risks associated with a single operator, night, tactical flight might include lack of situational awareness, inadvertent weather, over tasking, and degraded performance while risks associated with a multi-ship mission in the same environment would include mid-air collision as well. (These are usually contained in the unit SOP or designated by the command.) An example of some controls for the previous example may include a day route reconnaissance to establish minimum weather requirements, change the crew mix, adjust the mission execution time, conduct crew awareness briefings on landing procedures, and single operator takeoffs (recognizing and countering) training. For multi-ship operations, controls might also include a rehearsal to practice deconfliction procedures and to specify separation distances and altitudes.

STEP 3-DEVELOP CONTROLS AND MAKE DECISIONS

6-20. All hazards cannot be eliminated. There is a point at which the command must accept the risks and direct the mission to continue, modify the mission, or abort the mission. This is not to say that the risk management process stops. The risk management process is a continual process. There may come a time during a mission, when an opportunity exists to eliminate a particular risk. That opportunity might not be apparent if the risk management process is not continual. The intent is to mitigate the probability of an accident or the severity of the consequences with prudent controls whenever the risk is evident. For example, an experienced aircraft operator on a night mission while taxing with sufficient personnel and good illumination still has the possibility of an engine malfunction, a human error occurring, or propeller strikes. The command has identified the controls but cannot eliminate all the risks; it accepts the residual risks, in this case, as necessary and unavoidable.

6-21. To identify and implement controls, commanders should—
- Eliminate the hazard. This may include changing the crew, mission time (day versus night), equipment, or aircraft type.
- Guard or control the hazard. For flight operations, this might include routine radio calls to operations, crew mix, safety aircraft, emergency training, and minimum crew requirements.
- Change operational procedures to limit exposure to hazards. For example, minimize the number of systems or personnel or limit exposure to a particular hazard.
- Train and educate personnel in hazard recognition and avoidance. Some good examples include the limitations of night vision and the known performance and operational limits of the aircraft.
- Enforce the use of protective clothing or equipment that will minimize injury and damage potential. Examples include helmets, gloves, hearing protection, fire protected clothing, ground vehicle emergency kits, first aid training, and backup gear.
- Use color coding and signs to alert personnel of hazards—safety lanes in hangars, stairs, curbs, marking on aircraft for tail rotors, arming and refueling point markings.

STEP 4-IMPLEMENT CONTROLS

6-22. Integrate controls into the planning. Ensure awareness of the hazards and controls, from the commander through the individual(s) performing the task, is essential to success.

STEP 5-SUPERVISE AND EVALUATE

6-23. Leaders must enforce the controls and standards. The best risk management program is ineffective if the command does not enforce the controls. ACs are leaders while operating every aircraft on a mission and upholding standards must be a high priority. The most common cause of accidents is the failure of an individual to adhere to standards or a failure of the command to enforce a known standard.

6-24. Leaders must supervise activities of subordinate units. Battalion will supervise company operations; the company will supervise platoon operations, and so forth. Supervising a subordinate unit does not imply

interference. Only by seeing the character of operations will leaders fully appreciate risk implications or the effectiveness of the risk management program.

6-25. Leaders at all levels are responsible for supervising operations. From private to general, all Soldiers can, and must share in the responsibility for supervising. The purpose of this supervision is to ensure that the identification of hazards and that the controls are followed. Additionally, as conditions change, the supervisor continually evaluates the effectiveness of established controls to ensure successful completion of the mission.

RISK ASSESSMENT TOOLS

6-26. Using risk assessment tools—such as matrixes and diagrams—are valuable during the planning stage of a mission. These tools **do not** internalize the entire risk management process, but they do provide a systematic approach to identifying and reducing risk. However, **do not** allow the risk assessment tools to become the overriding concern of the risk management process. Tools merely provide a measurement for leaders to gauge risk and control effectiveness.

Note. Risk assessment tools **do not** make decisions. Leaders make decisions.

PROBABILITY

6-27. Probability is the likelihood of an event (table 6-2). This is your estimate, given what information you know and what others have experienced. The probability levels estimated for each hazard are based on the mission, course of action, or frequency of a similar event. For the purpose of risk management, there are four levels of probability—frequent, likely, occasional, and seldom.

Table 6-2. Probability chart

PROBABILITY–FREQUENT
Occurs very often (known to occur regularly). Given 500 or so exposures to the hazard, expect that it will definitely happen to someone. Two examples of frequent occurrences are rollovers and rear-ending a vehicle.
PROBABILITY–LIKELY
Occurs several times (a common occurrence). Occurs every 1,000 or so exposures. Examples are improvised explosive devices, wire strikes for aircraft, controlled flight into terrain, and accidental discharges.
PROBABILITY–OCCASIONAL
Occurs sporadically (but is not uncommon). You may or may not get through your deployment without it occurring. Two examples are unexploded ordnance and fratricide.
PROBABILITY–SELDOM
Remotely possible (could occur at some time). Usually several things must go wrong for it to happen. Two examples are heat-related death or electrocution.

RISK ASSESSMENT MATRIX

6-28. Figure 6-2 details an example of a risk assessment matrix.

	Probability				
Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L
E-Extremely High H-High M-Moderate L-Low					

Figure 6-2. Risk assessment matrix

6-29. Catastrophic is defined as follows:
- Loss of the ability to accomplish the mission or mission failure.
- Death or permanent total disability (accident risk) of personnel.
- Loss of major or mission-critical system or equipment.
- Major property (facility) damage.
- Severe environmental damage.
- Mission-critical security failure.
- Unacceptable collateral damage.

6-30. Critical is defined as follows:
- Significantly (severely) degraded mission capability or unit readiness.
- Permanent partial disability, temporary total disability exceeding 3 months time (accident risk).
- Extensive (major) damage to equipment or systems.
- Significant damage to property or the environment.
- Security failure.
- Significant collateral damage.

6-31. Marginal is defined as follows:
- Degraded mission capability or unit readiness.
- Minor damage to equipment or systems, property, or the environment.
- Lost day due to injury or illness not exceeding three months (accident risk).
- Minor damage to property or the environment.

6-32. One matrix cannot include all of the hazards of every mission nor can one matrix apply to all units. Commanders must determine the usefulness and content of any risk assessment tool. Commanders must consider a number of basic principles when they use these tools.

> *Note.* Additional risk management tools can be found at: https://safety.army.mil.

6-33. Commanders must remember—
- Adding the numbers up and finding the right level of command to accept the risk is not risk management.
- The risk assessment matrix is most valuable during mission planning.
- Each element of the matrix represents a specific hazard that, in the risk assessment process, translates into risk.

6-34. Commanders should review the unit METL as they develop risk assessment matrixes. Each METL task should be assessed from the highest risk to the lowest risk. Commanders should then select the task(s) or task elements on which they personally want to initiate risk reduction action and approval. Their risk assessment matrixes should clearly show these critical elements.

6-35. Commanders should include additional items when developing the risk assessment matrix, when applicable. An example of a high-risk mission is a relief on station with an inexperienced crew that just arrived in country, and restricted visibility caused by fog. The factors that play the biggest role in this example could be lack of experience and the new area of operations. Commanders may wish to refer these types of mission elements to the next higher commander for risk reduction or acceptance because the effect of these factors greatly increases mission risk.

Chapter 7

Unit Task Development

AIRCREW TRAINING MANUAL TASK MODEL DEVELOPMENT

7-1. Commanders are authorized to develop additional tasks for inclusion on the CTL, as needed, to accomplish the unit's mission if appendix A does not adequately cover a maneuver or mission that is required. To develop an additional task, the commander will create the task in the format described in this chapter, assign a 3000-series number to the task, and add it to the individual CTL along with iteration requirements. When an additional task is developed by the unit, the commander must perform a risk analysis for performance of the task, and determine training required for personnel to attain proficiency in the task. The commander will ensure that Soldiers receive the necessary academic and flight training for this new task during RL progression and will determine whether there is a requirement for an annual evaluation of the task. Commanders will submit a copy of all 3000-series tasks to Commander, USAACE, ATTN: ATZQ-TDT-N, Fort Rucker, Alabama 36362. The additional task(s) must include—

- Task number and title of the task.
- Conditions under which the task is performed.
- Standards for task performance.
- Description of task performance.
- Considerations for task performance (such as environmental and safety).
- Training/evaluation requirements.
- References.

TASK FORMAT

7-2. The following format will be used to develop 3000-series tasks. Each task element is explained further in the following paragraphs.

TASK NUMBER

7-3.   Task numbers are uppercase, bolded format. Task numbering begins with 3000 and runs sequentially (for example, Task 3000, Task 3001).

TASK TITLE

7-4. The task title describes the performance required of the Soldier on the job. It is frequently referred to as the task. The task title has one action verb, one object, and may also have a qualifier that describes the required action. Task titles are title case; **do not** use acronyms in the title. Using standard, well-defined verbs aids in providing quality training by—

- Providing/promoting clarity.
- Allowing analysts, task selection boards, trainers, and Soldiers to understand what the task title means.
- Helping to prevent duplication. Using standard verbs makes it simple to group tasks by verbs to avoid duplication.
- Promoting application of sound training principles.

WARNINGS, CAUTIONS, AND NOTES

7-5.   See examples of a warning, caution, and a note in figure 7-1, page 7-2.

```
┌─────────────────────────────────────────────────────────────┐
│  ┌───────────────────────────────────────────────────────┐  │
│  │                                                       │  │
│  │                      WARNING                          │  │
│  │                                                       │  │
│  │    All WARNINGS associated with the task will         │  │
│  │    follow the task title.                             │  │
│  │                                                       │  │
│  └───────────────────────────────────────────────────────┘  │
│  ┌───────────────────────────────────────────────────────┐  │
│  │                                                       │  │
│  │                      CAUTION                          │  │
│  │    All CAUTIONS associated with the task will         │  │
│  │    follow the task title or any WARNINGS.             │  │
│  │                                                       │  │
│  └───────────────────────────────────────────────────────┘  │
│  ─────────────────────────────────────────────────────────  │
│  *Note*. Notes may be added throughout the text of the task  │
│  as appropriate. Avoid overuse of note style.                │
│  ─────────────────────────────────────────────────────────  │
└─────────────────────────────────────────────────────────────┘
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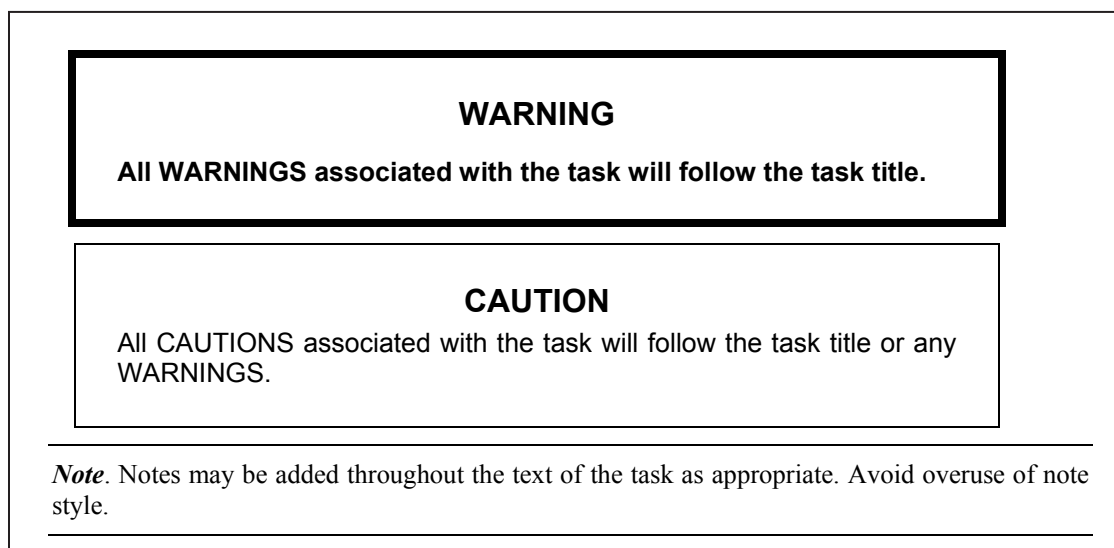
Figure 7-1. Warning, caution, and note examples

CONDITIONS

7-6.   Condition statements set parameters or sample parameters. TRADOC Pam 350-70-6 states that task conditions specify the common wartime or training conditions under which the task will be performed. Condition statements explain what to provide and what to withhold, and may be modified if necessary. Condition statements also describe the circumstances under which the task is taught or measured in the learning environment. The individual task condition statement describes the field circumstances (on-the-job or full spectrum operations) under which the individual critical task is performed as closely as possible. If the new task must be performed while operating the aircraft, as opposed to the flight simulator, ensure that "aircraft only" is specified as a condition. (Using the flight simulator can be explained in the training and evaluation requirements.)

- A condition statement has two parts:
  - Cue. A word, situation, or other signal for action. An initiating cue is a signal to begin performing a task or task performance step. An internal cue is a signal to go from one element of a task to another. A terminating cue indicates task completion.
  - Descriptive data. Include information identifying when, why, and where the task is performed and the resources (materials, personnel, and equipment) required for performing the task.
- Conditions include:
  - Whether the task can be accomplished in a flight simulator, the aircraft, academically, or a combination of these.
  - The publications and materials required to perform the task.
  - Any special equipment required for the task.
  - The flight conditions under which the task will be performed; for example, "visual meteorological conditions" (VMC) or "with reference to instruments only."
  - Any special conditions or tasks that must be accomplished prior to performing the task; for example, in an MQ–1C UAS under VMC.

7-7.   Write the individual task condition statement in standard paragraph format, containing one or more sentences. Use the following guidelines and tips for writing an individual task condition statement:

- Identify the cue.
  - The cue may be very evident or "understood" when writing a condition statement, and may not require detail.
  - Specifically, identify the cue if it is not evident. Identifying the cue may require studying items, such as, organizational diagrams; mission analysis; threat information; actions performed by outside units, Soldiers, leaders, or events; or procedural manuals.

- Identify/describe the physical setting, or the site of individual task performance. The amount of detail provided varies, based on the effect that the setting has on the task performance.

Note. Not all individual critical tasks are performed on the battlefield or during wartime.

- *DO NOT* make the setting too generic or too specific. *DO NOT* refer to a training environment. (A task condition is written to field performance, *NOT* training performance.
- When the task is performed at multiple performance sites, describe all sites, as practicable.

7-8.   Figure 7-2 provides examples of individual task condition statements. Write your individual task condition statements in a similar manner. Each example provides discussion points.

Condition #1

Given a constructed defensive position, entrenching tool, and camouflage nets.
Discussion: In this example—
When is-anytime a Soldier or the Soldier's unit is in danger of attack.
Where is-anywhere a Soldier or the Soldier's unit is in danger of attack.
Why is-because there is a threat to the Soldier and/or the Soldier's unit.
Resources required-an entrenching tool and camouflage nets.

Condition #2

You have a casualty who is suffering from a burn. The casualty has no other serious wounds or conditions that were not treated. A canteen and first aid packet are available.
Discussion: In this example—
When is-upon finding a burned casualty.
Where is-wherever there is a burned casualty.
Why is-the burn is the most serious injury and controls the boundary of the task.
Resources required-are limited to the resources on hand, which includes a canteen and first aid packet.

Figure 7-2. Individual task condition statements examples

7-9.   Figure 7-3 provides questions that are useful in determining whether condition statements have been well written.

Does the condition statement address the following issues:
- Describe the conditions under which this task will be performed under operational (field) or selected training conditions?
- Identify the initiating cue?
- Identify the physical setting (when and where the Soldier performs the task)?
- Identify the resources (materials, personnel, and equipment) needed to accomplish the task?
- Utilize job holder language?
- List special conditions when applicable?
- Utilize standard paragraph format?

Figure 7-3. Condition statement issues

SPECIAL CONDITIONS

7-10. A special condition is an aiding or limiting factor that occasionally occurs and affects a Soldier's ability to perform the task to the established standard. These special conditions include, but are not limited to, wearing of mission oriented protective posture level (MOPP) 4, night vision devices, or self-contained breathing apparatus when performing the task (figure 7-4). These unique circumstances are identified as separate special condition statements when conducting the individual task analysis, and are also entered under the conditions tab in the CAC-approved automated development system.

7-11. Writing special condition statements. Once changes to the task performance standard caused by performing the task under a special condition are identified, developers must include them. When writing a special condition statement, be aware that—

- More than one special condition simultaneously may affect task performance.
- A special condition may affect such standards as speed or accuracy.

Condition
You are in an area where chemical agents have been used. You are wearing protective over-garments and mask, or they are immediately available. You encounter a casualty who is breathing and lying on the ground. The casualty is partially dressed in protective clothing and is wearing the protective mask carrier with mask.
Special Condition: mission oriented protective posture level 4.

Figure 7-4. Special condition statement example

STANDARDS

7-12. Each task defines all the standards that must be met. Task standards describe the minimum degree of proficiency or standard of performance to which the task must be accomplished. For UAS flight tasks, standards are based on ideal conditions.

7-13. Standards must be—

- Observable and measurable.
- Written in present tense.
- Written in standard paragraph format. The paragraph may contain one or more sentences and may include subparagraphs and/or bullets.
- Written in job holder language.
- Observable, measurable, achievable, objective, valid, reliable, usable, comprehensive, discriminating, and quantifiable.

7-14. A standard statement has two parts:

- Performance–A verb phrase that identifies what action the standard will evaluate (that is, the process the Soldier performs, the product produced, or a combination of both).
    - A process standard describes the critical task elements necessary for adequate task performance.
    - A product standard describes the end result of individual task performance. Product standards should be used when the process it takes to perform the task is not important, as long as the product (end result) is correct.
    - A combination standard is used when task performance produces both a product and process.
- Criterion–May include, but is not limited to, accuracy, quantity, speed, and quality. Table 7-1, page 7-5, addresses recommended criteria for each type of task performance.

Table 7-1. Task performance criteria

Individual Task Standard	Criteria to Use
Product Standard	Accuracy, tolerances, completeness, format, clarity, number of errors, and quantity.
Process Standard	Sequence, completeness, accuracy, and speed of performance.
Combination Standard	Accuracy, tolerances, completeness, format, clarity, number of errors, quantity, sequence, and speed of performance.

7-15. Parts of example standard statements may include the following:

- Check and operate UAS radios as required.
- Establish and maintain radio contact with the desired unit and/or ATC facility.
- Operate all internal/external communication systems and mission equipment (to include identification friend or foe [IFF], Blue Force Tracker [BFT], and/or Link-16).
- Describe two-way radio failure procedures IAW local procedures, the FIH, comply with International Civil Aviation Organization (ICAO) rules, or host country regulations.
- Without error, adjust system radios to the proper frequencies.
- When communicating with ATC facilities, use the correct radio communication procedures and phraseology IAW FAR, AIM, and DOD FLIP.
- Acknowledge each radio communication by using the correct aircraft call sign.
- Correctly perform crew coordination actions.
- Perform crew coordination actions IAW chapter 4 and the task description.

Note. It is preferred not to use a standard that refers to another document; but in the case of aircraft maintenance, it is mandatory to use the TM. Duplicating the TM causes extra work and serves no value, since the TM is used when the task is performed.

DESCRIPTION

7-16. Task descriptions are the "how to" portion of the task.

- Descriptions will normally be divided into two sections: crew actions and procedures.
- Ensure that the correct designation for the crewmember is used in the description to avoid confusion.
- Procedures identify the preferred method of accomplishing the task.
- Make sure the standards for the task are clearly defined in the "STANDARDS" section; however, it may be necessary to refer the reader to the description section for specific requirements.
- Using the words *will*, *should*, and *may* (when writing the task description) must be IAW the definitions in chapter 1.
- Deviations from task procedures—but not crew actions—are authorized as long as task standards and safety are not compromised.

CONSIDERATIONS (NOT MANDATORY FOR ALL TASKS)

7-17. Task considerations define the different requirements for performing the task under different flight conditions (VMC, night, or different payload sensors) or under adverse environmental conditions. They must address the unique requirements of performing the task under those conditions. An example of night considerations is shown in figure 7-5, page 7-6.

ENVIRONMENTAL CONSIDERATIONS

7-18. The environmental considerations section of a task must address the unique requirements of performing the task under different flight modes or under adverse environmental conditions.

7-19. The following are examples of environmental considerations:

- Altitude, apparent ground speed, and rate of closure are difficult to estimate at night.
- Surrounding terrain or vegetation may decrease contrast and degrade depth perception during the approach. Before descending below obstacles, determine the need for artificial lighting.
- Use proper scanning techniques to avoid spatial disorientation.
- Acquire, identify, track and/or designate targets using the sensor's optimum capabilities (electro-optical (EO), infrared) for a given situation based on mission, enemy, terrain and weather, troops and support available, time available, civil considerations (METT-TC).

ENVIRONMENTAL CONSIDERATIONS:
1. Altitude, apparent ground speed, and rate of closure are difficult to estimate at night.
2. Surrounding terrain or vegetation may decrease contrast and degrade depth perception during the approach. Before descending below obstacles, determine the need for artificial lighting.
3. Use proper scanning techniques to avoid spatial disorientation.
4. Acquire, identify, track and/or designate targets using the sensor's optimum capabilities (electro-optical/infrared,) for a given situation based on mission, enemy, terrain and weather, troops and support available, time available, civil considerations.

Figure 7-5. Example of environmental considerations

TASK EXAMPLE

7-20. Figure 7-6, details an example of task format.

Note. The following task is intended for *explanation of formatting style only*; it **does not** constitute doctrinal procedure.

TASK 3000

Perform Close Combat Support

WARNING

All WARNINGS associated with the task will follow the task title.

CONDITIONS: Condition statements set parameters or sample parameters. TRADOC Pam 350-70-6 states that task conditions specify the common wartime or training conditions under which the task will be performed. Condition statements explain what to provide and what to withhold, and may be modified if necessary. Condition statements also describe the circumstances under which the task is taught or measured in the learning environment. The individual task condition statement describes the field circumstances (on-the-job or full spectrum operations) under which the individual critical task is performed as closely as possible. It also lists what materials, personnel, and equipment must be provided for task accomplishment. If the new task must be performed in the aircraft, as opposed to the simulator, ensure that "aircraft only" is specified as a condition. Using the simulator can be explained in the training and evaluation requirements.

STANDARDS: Each task defines all the standards that must be met. Task standards describe the minimum degree of proficiency or standard of performance to which the task must be accomplished. For aviation flight tasks, standards are based on ideal conditions. Standards must be observable and measurable.

DESCRIPTION:

    1. Crew actions.

        a. Ensure that the correct designation for the crewmember is used in the description to avoid confusion.

        b. Make sure crew actions (for example, aircraft operator (AO), payload operator (PO), aircraft commander (AC) by all individuals involved to accomplish this task are captured.

    2. Procedures.

        a. Procedures identify the preferred method of accomplishing the task.

        b. Make sure that all individual (for example AO, PO, AC) procedures involved to accomplish this task are captured.

ENVIRONMENTAL CONSIDERATIONS:

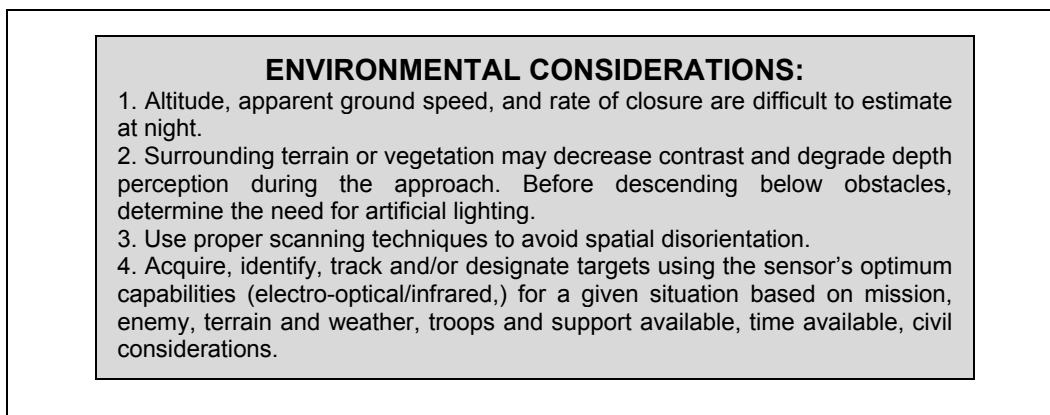   1. Task considerations define the different requirements for performing the task under different flight conditions or under adverse environmental conditions.

    2. Environmental considerations must address the unique requirements of performing the task under those conditions.

TRAINING AND EVALUATION REQUIREMENTS:

    1. Training. Training may be conducted while operating the aircraft or simulator.

    2. Evaluation. The evaluation will be conducted while operating the aircraft.

REFERENCES: FM 3-04.126, TC 3-04.45, and AR 95-23.

Figure 7-6. Example of task format

REFERENCES

7-21. References list sources of information relating to the task. List only unique references; for example, FM 3-04.155, TC 3-04.45, FM 3-04.126, AR 95-23, and FM 3-04.203.

Chapter 8

Training the Unit

TRAINING STRATEGY

8-1. The training strategy is developed using the outcome of the training assessment. This training strategy is then issued to subordinate commanders through the commander's training guidance (CTG).

NEAR-TERM PLANNING

8-2. Used for the monthly training schedule, the S-3, with assistance from the UAS technician —
- Reviews TADSS and allocates training resources to specific trainers.
- Ensures that training events are well structured, efficient, realistic, safe, and effective.
- Must ensure that informal evaluation and feedback by trainers and senior leaders are continuous and that formal evaluations are included in training plans. (Evaluation documentation can range from annotated training and evaluation outlines to CTC take-home packages.)

LONG-RANGE PLANNING

8-3. Used for the new annual training calendar, the S-3, with assistance from the UAS technician —
- Carefully studies the brigade CTG and key training events in which the unit will participate.
- Selects appropriate training scenarios with supporting operations plans from the training support packages.
- Coordinating with the brigade, division, and the military community, chooses training event dates that **do not** conflict with other key calendar events.
- The tools used to develop a long-range training plan are the battalion training strategy, the brigade and division's CTG, and the brigade and division long-range training calendar—12 to 18 months out. These calendars may be viewed by subordinate commanders during their unit training planning.

QUARTERLY TRAINING CALENDAR

8-4. When preparing the quarterly training calendar, the S-3, with assistance from the UAS technician —
- Studies the brigade CTG and the battalion annual training calendar.
- Identifies, allocates, and coordinates short lead-time resources such as local training facilities.
- Pays particular attention to CTC lessons learned when developing training objectives and tasks to include in an FTX operation order.
- Allocates time on the aviation combined arms tactical trainer and other critical training resources.
- Cross-references each event with specific training objectives and coordinates with all supporting agencies, the battalion staff, and unit commanders.

AIRCREW TRAINING PROGRAM

8-5. The ATP is an integral, not separate, part of the commander's overall unit training program and it should be briefed at each quarterly training brief. Proficient aircrews are essential to effective collective training. UAS leaders must maintain a balance between individual, aircrew, and collective training. The ATP, mandated by AR 95-23, is a structured and prescriptive management and evaluation program focused

on training Army aircrews. The ATP applies to all Army operators in operational flying positions. Developed IAW this TC and its appendix A. The ATP includes training of the base, mission and additional tasks necessary for the accomplishment of a unit's METL. In today's command operating environment, small unit leadership is critical to mission execution. For UAS, small unit leadership equates to AC. Training must be tailored to ensure these elements are integrated into the training regime of our units. Leader supervision and participation at all levels is essential to the successful execution of the ATP. Commanders use this TC, ADPs, ADRPs, ATMs, UTLs, TC 3-04.45, the CATS, and other publications as appropriate to develop the unit's ATP.

8-6. The ATP, with the factors that affect it, is a major consideration in developing the long-range training plan. Consideration must be given to—

- Individual operator proficiency.
- Aircrew proficiency (battle-rostered crews).
- The unit maintenance program.
- Flight-hour allocation to supported units when UAS training is conducted during supported unit missions.
- Individual and aircrew training that is usually accomplished while not in a support role; for example, emergency procedures training, flight evaluations, and instrument proficiency training.
- Operator training accomplished in crew and collective simulators/simulations.

8-7. Units are required to have an ATP addressing specific requirements for conducting training, evaluation, assessment, and program revision. Commanders should use multi-echelon training objectives, scenarios and STXs to facilitate the development, execution, and continual assessment of their training program. Scenarios and STXs for individual, crew, and collective training must be mutually supportive and progressive in intensity and complexity. Effective individual and crew training programs form the foundation for a UAS battle-focused training program. These programs produce combat ready crews and are the basis for the unit's collective training program. Collective training must focus on combined arms/joint operations across the spectrum of the unit's METL. Limited resources, environmental restrictions, new and sophisticated aircraft mission equipment packages, and multiple contingency operations will all impact on the commander's ability to train and maintain proficiency at all levels.

Chapter 9

Collective Training Factors

INDIVIDUAL AND COLLECTIVE TRAINING INTEGRATION TRAINING

9-1.   To achieve maximum training results from limited resources, planning must be detailed and flying/simulator hours must be dedicated to maintaining individual and crew proficiency as outlined by the UAS CATS. The integration of individual continuation training into collective training makes maximum use of every hour of flight time. Units must incorporate collective training into every element of this TC. The link between the collective mission essential tasks, this TC, and additional (3000 series) tasks that support them, is critical to the battle focused training concept. The commander plans, prepares, executes, and evaluates training using mission related scenarios based on the unit's METL. The commander selects critical battle tasks from the unit's METL and emphasizes the execution of these tasks during training and evaluation. These critical battle tasks become subordinate unit's METL. All aviation enablers (manned assets, air traffic services (ATS) must be integrated into collective training events at every opportunity like gunneries, FTXs, and command post exercises.

9-2.   Integration of battle command training within the collective tasks will ensure that the commanders and staffs have the capability to provide command and control to the formations in the most efficient means. The battle command training strategy identifies the requirements and resources needed for battle command training to provide commanders the tools to train individual operators, leaders, and battle staffs across the entire spectrum of operations. It enhances battlefield decision-making of leaders at all echelons.

COLLECTIVE TRAINING EXERCISES

9-3.   During the training year, commanders will schedule exercises based on the type of collective training their unit requires as prior assessments dictate. As outlined in ADP 7-0, the crawl-walk-run method of training fits well into collective training exercises also. Individual and crew training are the crawl stage of training. The STX and other small exercises, which focus on one battle task or a single METL task, are the walk stage. The FTX, CTC, and so forth, are the run stage of training. Again, commanders cannot skip stages. STXs are mission-related, limited exercises designed to train one collective task or a group of related tasks and drills through practice. Synonymous terms often used are situational exercise and scenario. Based on the unit's METL, commanders may modify or expand existing STXs to meet special mission requirements. These exercises aid in transitioning from individual and crew proficiency to collective task proficiency.

9-4.   The following training exercise benefits uses a STX as a model, but these benefits apply to all levels of training exercises (STXs, FTXs, and CTCs). STXs will—
- Focus training on weaknesses identified in previous training and evaluations through the critique and after action review.
- Provide repetitive training on parts of missions.
- Save time by providing information needed to develop training.
- Allow the operator, crew, or unit to practice selected critical parts of the mission before rehearsing the entire mission.

9-5.   Commanders should develop STXs as a training and ATP management tool. Pre-constructed STXs, based on a thorough training needs analysis, provide limited scope, short-term exercises that are central to sustainment training. STXs should permit simultaneous accomplishment of base, mission, additional, and collective tasks.

9-6.   Input from the unit's implementers allows the commander to structure collective training that includes individual and crew proficiency training. Performing collective training tasks will then enhance and sustain individual proficiency. This following guidance is for proficiency sustainment for individual and crew training:

- Implementers are not required to develop the unit collective scenarios and STXs, but are critical to their successful development.
- Implementers should review all individual and crew training scenarios and STXs to verify that all tasks on the CTL are included for performance by crewmembers in sustainment training.
- Scheduling of CTL or METL iterations should be monitored to ensure that task iterations are performed at a pace that maintains proficiency and does not peak or wane.

9-7.   The following steps will help the commander develop STXs that support METL requirements:

- Select the battle task(s) to be performed. A battle task is a task that must be accomplished by a subordinate unit organization if the next higher headquarters is to accomplish a mission essential task.
- Establish the conditions and standards for the selected battle task. Use appendix A/MTP.
- Develop a mission statement to support the battle task.
- Identify the company battle task that supports the battalion METL task. For example—
  - Supported battalion METL task. Conduct combat operations.
  - Company battle task. Conduct a deliberate attack.
  - Identify collective supporting tasks. Use MTP tasks.
  - Apply time standards.
  - Identify required references/resources.

9-8.   All training exercises should have realistic training objectives. Any training exercise that focuses on raising the proficiency level of a unit and replicates actual combat conditions, as nearly as possible, will have a beneficial effect on training. This is especially true at battalion level and below. Virtual and constructive simulation training cannot replace live training. However, they can supplement, enhance, and complement live training to sustain unit proficiency within the "Band of Excellence". Based on resources available (such as time, ammunition, simulations, and range availability), commanders determine the right mix and frequency of live, virtual, and constructive training to ensure efficient use of allocated training resources. The commander must ensure that the STXs **do not** become routine training flights. The commander will clearly define the exercise goal and all participants must understand the objectives in their role(s).

9-9.   The ARTEP/MTP gives units a clear description of what and how to train to achieve wartime mission proficiency. They elaborate on wartime missions in terms of comprehensive training and evaluation outlines. The ARTEP/MPT also provides exercise concepts and related training management aids to help field commanders plan and execute effective unit training. The applicable ARTEP/MTP gives examples for developing and using STXs.

COMBAT TRAINING CENTER PREPARATION

9-10. CTC rotations are valuable training tools when units have the opportunity to plan, prepare, execute, and assess/recover. Units must plan far enough in advance and use the ARTEP/MTP, CATS, unit METL, and ATP when planning a CTC rotation to maximize the benefit from the resources allotted.

9-11. Environmental training for CTC rotations is critical. Home station training should replicate as closely as possible the actual CTC conditions. It is not possible to replicate the exact conditions of the CTC at home station; therefore, unit commanders should plan time for flight crews to spend time during force buildup at the CTC to become proficient in the new environment. Additionally, commanders should take full advantage of flight simulator training to replicate the CTC conditions during their preparation.

9-12. Commanders must be cautious since some UAS units that deploy to a CTC too often during the same training year may actually experience a reduction in overall training and equipment readiness. This law of diminishing returns is most prevalent in assault and general support battalions. For example, as a unit

returns from a CTC rotation and prepares to move into the assessment and recovery phase of the training cycle. A unit may skip, or severely curtail, the assessment, recovery, and planning phases of the training cycle and move directly back into the preparation and execution phases. For these reasons, a unit might actually find itself at a lower state of training and overall readiness at the conclusion of a subsequent CTC rotation than it was after the completion of the first.

TRAINING SIMULATORS

9-13. Simulation systems make staff and unit training easier to plan and execute and less expensive. Brigade and battalion simulation, Joint Army-Navy Standard, aviation combined arms tactical trainer, and the aviation training exercise are all examples of the simulation systems and exercises available for collective training. Simulations greatly decrease the cost of training while allowing the staff and unit to train on tasks too expensive and possibly too dangerous to perform on a routine basis during a field exercise. As with all training, whether live, virtual, or constructive, leaders must be actively involved during all stages of planning and execution. Some of the benefits commanders and other leaders will gain through simulation are as follows:

- Simulation is a low-distraction and low-risk environment. Training takes place without the added attention commanders must give to non-mission essential tasks. Leaders can focus on the battle skills pertinent to the particular simulation.
- Leaders go through all of the planning, rehearsal, and execution steps necessary for actual missions. However, when discrepancies arise, the leadership can stop the planning, rehearsal, or execution and guide subordinates to accomplish a particular step correctly.
- A simulation provides a chance for leaders to assess, validate, and change SOPs, TTPs, and so forth.
- Many simulations have a playback capability. Commanders can start the simulation over at any moment within the battle to retrain a deficient task.
- Leaders can freeze the battle, conduct an AAR on recently simulated events, and return to the battle at the instant it was stopped. This affords the commander the ability to change the course of the battle to accomplish those collective tasks that the simulation was designed to train or reinforce.
- Often commander's can observe the unit through a stealth mode. Commanders can see and hear what the crew sees and hears. Commanders can then correctly assess their actions and may discover tasks that may require additional training.
- Collective simulation training is a chance to train task force staffs or units that have previously not operated together. Commanders and staffs can work as a cohesive unit on the battlefield only after having performed collective tasks together prior to actual combat.
- Ground units, ranges, training centers, and so forth may not be available when the commander schedules the unit for training. Through simulation, the commander can have all of those assets required to properly conduct beneficial training at the time the unit requires that training.
- The commander and other leaders can focus on weaknesses that need improvement and identify strengths that may not have been readily visible through live training events.
- There is also a reinforcing benefit to many supporting tasks.

BATTLE ROSTERING

9-14. Battle rostering should complement the UAS standardization and aircrew coordination programs. When commanders battle roster crews, they should consider the individual operator's flight and unit experience, individual personalities, and individual maturity. Prolonged battle rostering without consistent evaluation may lead to crew complacency, overconfidence, implicit coordination behaviors, and nonstandard procedures. Battle rostering is most beneficial when used for short periods, such as during training exercises, operational deployments, recent redeployments, and gunnery training. Battle rostering increases combat readiness and performance by creating a stable atmosphere, where individual strengths are complemented, weaknesses are minimized, and crew coordination is enhanced. Battle rostering takes the above considerations and creates a team that maximizes the combat performance characteristics of that

crew and UA. Therefore, battle rostering is most beneficial when used in coordination with a solid aircrew coordination program.

9-15. Commanders should consider the individual's UAS, flight, and unit experience during the battle-rostering process. They also should consider individual personalities and maturity. For example, a specialist (E-4) AC, experienced in the unit's mission, could be battle-rostered with a newly assigned staff sergeant (E-6). When there is a change in crew personnel, the commander must determine the proficiency of the newly constituted crew and understand that additional training may be required.

9-16. Although beneficial, commanders must be aware that prolonged battle rostering of the same crewmembers may produce crew complacency, overconfidence, implicit coordination behavior, and nonstandard procedures, which result in a degradation of crew proficiency. Thus, battle rostering is beneficial, but only when used for short periods-such as training exercises, STXs, operational deployments, and gunnery training.

UNMANNED AIRCRAFT COLLECTIVE GUNNERY

9-17. The UAS gunnery program begins with the GTs IAW TC 3-04.45. Commanders will use TC 3-04.45 and DA Pam 350-38 to develop a progressive and continuous UAS gunnery program. UAS crews must qualify GTs IAW TC 3-04.45 prior to participation in platoon/company/troop qualifications or combined arms live-fire exercises (CALFEXs). The advanced tables provide the UAS commander with a tool to train and assess the unit's collective gunnery skill. These tables emphasize—

- Command and control.
- Situational awareness.
- Tactical placement/movement within the battle area.
- Communications flow of tactical information.
- Target acquisition.
- Engagement priorities.
- Fire distribution.
- Discipline of fires.

9-18. Commanders must consider the following factors when developing collective gunnery training programs:

- The unit master gunner is the primary special staff instructor for all gunnery-related matters.
- Ammunition is resourced using DA Pam 350-38.
- Ammunition, used for CALFEXs, STXs, and other training events or demonstrations must not be drawn against Standards in Training Commission allocations, but must be resourced separately. Failure to do so will result in insufficient ammunition to qualify crews annually as required by TC 3-04.45.
- Simulators and simulations are used to enhance and maintain gunnery proficiency at crew-level skills.
- The unit METL and mission training plan (MTP) must dictate the tactical scenarios, weapons mix, and task organizations used when conducting advanced GT.
- CALFEXs are not advanced GT.

INTEGRATION OF ADDITIONAL TRAINING REQUIREMENTS

9-19. All UAS training requirements should be listed in the ATP and documented in the unit short-term and long-term training plans. There are also areas of special interest that have unique requirements and directly affect the unit's ability to perform its METL missions. Whenever possible, commanders must integrate these additional training requirements into collective training. While some of these requirements focus on individual skills and knowledge, others (such as environmental training) have a large collective component—dual UA conducting a relief on station in a sand/dust environment versus a single UA operating in the same conditions.

9-20. Additional training requirements that should be specifically integrated into collective training include, but are not limited to, the following:

- Mission coordinator training.
- CBRNE training.
- Environmental training.
- Multiple aircraft operations training.
- UA recovery training.

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Chapter 10

Aircrew Training Program Standing Operating Procedures

10-1. The sample ATP SOP is a guide to what should be addressed in a unit's ATP SOP. The sample is not intended to be prescriptive or all inclusive. At a minimum, the SOP must address the following areas:

- The conduct of training.
- Crewmember and crew evaluation.
- AC and MC training, assessment, and evaluation.
- Mission briefing officer/NCO training and certification program.
- Assessment of the ATP effectiveness.
- Revision of the ATP.
- The requirements from DA Pam 385-40, and DA Pam 385-90, as applicable.

10-2. Text in italics is commentary. It explains the section in which the text is found. Where a brief explanation may be insufficient to explain an SOP section, a sample section is included.

10-3. Where appropriate, information references are included and should be consulted to clarify any material not in this sample.

STANDING OPERATING PROCEDURES SECTIONS

10-4. The following sections are found in an SOP.

- **Introduction.** The introduction is normally a short section explaining the following items:
  - General–The general section introduces the training SOP.
  - Suggested improvements–States the unit's procedures for suggesting changes to the SOP.
- **Table of contents.** Table 10-1 shows a table of contents that an ATP SOP should contain, if applicable.

Table 10-1. Air training program SOP table of contents

Commanders Delegation of Authority
Revision of Standing Operating Procedures (SOPs)
Assessment of SOP
Aircrew Information Reading Files
Standardization Committee
Commanders' Evaluation
Proficiency Flight Evaluation
Local Orientation Requirements
Training Programs
• Conduct of training.
• Crew qualification, selection, training, designation, and evaluation requirements.
• Mission brief/approval training and certification program.
• No-notice evaluation program.
• AMC training and certification program.
• Aviation mission survivability training program.
• Instrument flight and inadvertent instrument meteorological condition training.
• Simulator training requirements.

Table 10-1. Air training program SOP table of contents, continued

Training Programs
• Collective training requirements.
Additional Training Requirements
• Academic training program and makeup requirements.
• Aeromedical training requirements.
• Computer-based aircraft survivability equipment training (CBAT), combat identification (CID) training and simulator program, recognition of combat vehicle requirements, and personnel recovery.
Special Interest and Unique Training
• Environmental training program.
• Chemical, biological, radiological, nuclear, and high-yield explosives training.
• Aerial gunnery training program.
• Operating procedures.
• Operations in a tactical environment.
• Fighter management/crew rest procedures.
• Terrain flight hazard avoidance.
• Multi-ship operations.
• Briefing.
• Command-and-control procedures with ground commander.
• Refueling/defueling forward arming and refueling point procedures.
• Extreme environmental operations (blowing snow/sand, desert, arctic/cold weather, mountain, jungle and overwater).
Safety
• Aviation mission risk-management process.
• Foreign object damage program.
• Protection of personnel and equipment from severe weather and environmental hazards.
• Responsibilities of aircrews when involved in an accident.
• Hazardous material handling.
• Hazardous communications procedures.
• Operational hazard reporting procedures.
Maintenance Procedures
• Aircraft maintenance procedures.
• Hangar and mooring procedures.
• Maintenance shop operations.
• Contractor flight operations (if applicable).
• Maintenance functional check qualification and training (ground/airborne) program (If applicable)

COMMANDER'S DELEGATION OF AUTHORITY

10-5. An ATP may be implemented at a level higher than the level at which it is administered (for example, an ATP implemented at brigade level, but managed at the battalion and company level). To clarify responsibility and clearly delineate authority, the SOP should have a section that defines the roles of subordinate commanders in managing the ATP (table 10-2, page 10-3).

Table 10-2. Sample SOP–role of subordinate commanders

a. References:

- AR 95-23.
- AR 95-2.
- Local command supplements to AR 95 series.
- DA Pam 738-751.
- TC 3-04.63.
- Appropriate local regulations and policies.

b. Purpose. If the commander chooses to delegate or otherwise define authority in the unit aircrew training program (ATP), it should be described in the standing operating procedures.

c. Responsibilities. This section defines delegation authority.

d. General. Due to organizational differences, and those situations that might arise through deployments and temporary attachments/assignments, it may be necessary to define 'commander' for purposes of ATP implementation.

e. AR 95-23. Specific authority is defined and described. This section states the respective authorization as established by the commander who has overall responsibility for the ATP.

AIRCREW TRAINING PROGRAM

10-6. This section is the heart of the SOP. It outlines the commander's intent for training and sustaining proficiency for all assigned and attached crewmembers (table 10-3).

Table 10-3. Sample SOP–commander's intent

a. References:

- AR 95-23.
- Local command supplements to AR 95-23 as appropriate.
- TC 3-04.63.
- Appropriate local regulations and policies.

b. Purpose: The purpose states the commander's intentions for the aircrew training program (ATP). It should also establish who is covered by the unit's policy.

c. Responsibilities: Identifies key personnel and briefly states their responsibilities in the ATP.

d. The ATP: Outlines specific procedures for managing the unit's ATP. At a minimum it should address—

- Flight activity category (FAC) designation (and specifically identify modification table of organization and equipment positions that are FAC 1, 2, and 3).
- The process for incorporating a newly assigned crewmember into the ATP.
- The RL progression process and any local documentation requirements. This section should also state those requirements that are unit mandated in excess of TC 3-04.63 requirements.
- Continuation training requirements for crewmembers that have completed readiness level (RL) progression. Evaluations, local requirements, and documenting training in excess of TC 3-04.63 requirements should be stated.
- Required evaluations and any command guidance on more demanding modes of flight; for example, actual flight versus simulation.
- Use of flight simulators for evaluations.
- Procedures for processing crewmembers who have failed an evaluation.
- Commander's required tasks for currency proficiency flight evaluations will be accomplished in accordance with TC 3-04.63.

Table 10-3. Sample SOP–commander's intent, continued

• Procedures for crewmembers that have not completed requirements established by TC 3-04.63 or the ATP.
e. Situational training exercises (STXs): The chapter addresses the commander's guidance on using STXs to enhance training. Tracking the performance of STXs at the individual level is not required; however, it is recommended. The unit policy on tracking STX performance should be established in this section.
f. Aircrew coordination training-enhanced (ACT-E): This section contains the commander's guidance on initial, refresher, and continuation ACT-E training. It also contains any evaluation requirements established by the commander in excess of requirements established by TC 3-04.63.
g. IATF. While the requirements of TC 3-04.63 are mandatory for maintenance of individual aircrew training folders (IATFs), units may direct additional procedures or policies for maintaining these important training records; for example, establish a requirement for company standardization instructor operator/instructor operator to review each IATF.
h. Unit forms: If a commander determines that specific unit-unique forms or formats are required to efficiently maintain the unit's ATP, this chapter must contain examples of those blank forms or formats.
i. Additional tasks: The unit's ATP chapter must specify those tasks the commander has determined are necessary to accomplish the unit's mission essential task list missions that are not published in appendix A. These tasks are developed by the unit as necessary. See chapter 7 of TC 3-04.63 for guidance in developing 3000-series tasks. Once developed, these tasks must be included in the unit ATP.

CREW QUALIFICATION AND SELECTION

10-7. Crew qualification and selection are the bedrock of an ATP. Procedures and responsibilities for key unit personnel should be identified and explained (table 10-4).

Table 10-4. Sample SOP–crew qualification and selection program

a. Reference: AR 95-23.
b. Purpose: To establish the commander's flight crew qualification and selection program.
c. Responsibilities: Briefly describes the responsibilities of key unit personnel in the crew qualification and selection process.
d. Qualification requirements: If unit requirements are more stringent than TC 3-04.63 or AR 95-23, or if the unit has unique requirements for duty positions, they should be stated. At a minimum, this section should address the following crewmember duty positions: • Aircraft operator   • Aircraft commander   • Unit trainer   • Standardization instructor operator/instructor operator
e. Evaluation requirements: This section establishes the commander's requirements for conducting standardization evaluations used to establish a duty position. Any requirement that exceeds TC 3-04.63 or AR 95-23 should be stated.

MISSION BRIEFER/APPROVAL TRAINING CERTIFICATION PROGRAM

10-8. Commanders (Lieutenant Colonel and above) will develop and publish policies and procedures for the mission approval process for those units under their command. Commanders will establish a training and certification program to ensure standardization and understanding of the mission approval and risk-management process for personnel. Table 10-5, page 10-5, provides a sample of the SOP–mission brief/approval training certification program.

Table 10-5. Sample SOP–mission brief/approval training certification program

a. Reference: AR 95-23.

b. Purpose. To establish the commander's mission briefer and approval authority.

c. Responsibilities. Briefly describes the responsibilities of key unit personnel in the mission briefing and approval authority qualification and selection process.

d. Qualification requirements. Commander or their designated representative that interacts with the mission crew, AC to identify, assess, and mitigate risk for the specific mission. Commanders will select briefing officers based on their experience, maturity, judgment, and ability to effectively mitigate risk to the aircrew and designate them by name and in writing. Mission briefers are authorized to brief regardless of risk level. Briefing officer must be a qualified in the mission profile as determined and designated by the commander. At a minimum, mission briefing officers will review and assess the following key areas in the mission planning process:

- The flight is in support of an operational unit mission and has been approved by step one.
- The crew understands the mission and possesses situational awareness of all tactical, technical and administrative mission details.
- Assigned flight crews have been allocated adequate pre-mission planning time and the mission is adequately planned to include performance planning, notice to airmen, and coordination with supported units.
- Assigned flight crews are qualified and current for the mission in accordance with (IAW) AR 95-23. The commander's flight crew qualification and selection program, aircrew reading file currency and crew experience appropriate for the mission.
- Forecast weather conditions for the mission, including departure, en route and arrival Weather, meet the requirements of AR 95-23 and local directives.
- Flight crews meet unit crew endurance requirements.
- Procedures in the commander's risk management program are completed and mitigated to the lowest level possible.
- Required special mission equipment is operational.

e. Final mission approval authority is designated to members of the chain of command that are responsible for accepting risk and approving all aviation operations (ground and air) within their unit. Final mission approval authorities may only approve those missions whose assessed risk level is commensurate with their command level. At a minimum, company commanders and below are the final mission approval authority for low-risk missions, battalion commanders and above for moderate risk missions, brigade commanders and above for high-risk missions, and the first general officer in the chain of command for extremely high-risk missions. Approval authorities are based upon levels of command authority and not rank. Based on the resulting mitigated risk, the appropriate final approval authority reviews the mission validity, planning, risk mitigation, and authorizes the flight/operation IAW the commander's policy. The final approval authority indicates authorization for flight by initialing the DA Form 5484 with the briefing officer and aircraft commander.

AIRCREW INFORMATION READING FILE

10-9. Information constantly changes during operations. To ensure aircrews have access to the most current information in a timely manner, each unit will establish an AIRF. In this section of the SOP, the unit addresses how the AIRF is maintained. This section will also establish the frequency at which crewmembers must read the AIRF (table 10-6, page 10-6).

Table 10-6. Sample SOP–aircrew information reading file

a. References:
- AR 95-23.
- DA Pam 385-90.
- TC 3-04.63.

b. Purpose: Briefly states the purpose of the aircrew information reading file.

c. Responsibilities: Briefly states the responsibilities of key unit training personnel that maintain the unit reading file and monitor its use by unit crewmembers.

d. General: Outlines requirements and contents of the aircraft information reading files (AIRF). Establishes the frequency with which crewmembers must review the AIRF and states the minimum publications or documents that are maintained in the AIRF.

e. Crewmember compliance monitoring: Establishes and describes the methods or techniques the unit uses to ensure that crewmembers read the monthly or quarterly AIRF. This portion of the standing operating procedures (SOP) should also state what actions occur should a crewmember fail to read the AIRF as required by the SOP.

f. Validity of material in AIRF: Establishes the time frames during which information in the AIRF is considered current. Should also establish how temporary information is incorporated into the unit SOP, policy memoranda, or discarded when no longer applicable.

OPERATOR LOCAL AREA ORIENTATION

10-10.   Operator local area orientation (LAO) is an important part of the ATP. It is required to be accomplished prior to a crewmember being designated RL 1. This ATP section should establish those specific procedures necessary to comply with AR 95-23 and this publication. Documentation aides-for example, CL, or other local forms or records used to document LOAs must be addressed in this portion of the SOP (table 10-7).

Table 10-7. Sample SOP–operator local orientation training

a. References:
- AR 95-23.
- TC 3-04.63.

b. Purpose: States the purpose for the local area orientation (LAO) as required by TC 3-04.63 before progression to readiness level 1.

c. General: Establishes any unit requirements for conducting and documenting the LAO that are more restrictive than published guidance; for example, use of unit checklist, location of unit checklist in individual aircrew training folder (IATF), how long the information is maintained in the IATF, and which orientation items are to be performed at day, night or both.

AIRCRAFT COMMANDER ELECTION, EVALUATION, AND DESIGNATION

10-11.   The unit's process for electing, evaluating, and designating crewmembers to perform AC duties must be addressed in the SOP (table 10-8).

Table 10-8. Sample SOP–aircraft commander selection and designation

a. References:
- AR 95-23.
- TC 3-04.63.

b. Purpose: Clearly and briefly state the commander's intent for the unit's aircraft commander's policy.

Table 10-8. Sample SOP–aircraft commander selection and designation, continued

c. Responsibilities: Establishes responsibilities for key personnel in the aircraft commander (AC) selection and qualification process.

d. General: An aircraft commander is an operator that has demonstrated the judgment and ability to perform all of the mission requirements for the assigned aircraft; uses proper procedures and operates the aircraft safely and maturely. The AC is proficient and knowledgeable in all aspects of the unit's mission and is capable of executing all appropriate mission tasks. Experience, knowledge, maturity, and the ability to effectively mitigate risk are the requirements of an AC.

e. Prerequisites: Should address—

- Aircraft qualifications and currency.
- The demonstrated of sound judgment and maturity in daily work/flight activities.
- Technically and tactically proficient in the unit's mission.

f. Selection: Each unit commander will establish a selection process. This selection process should be based upon the recommendations of, but not be limited to, the following personnel: commander, platoon leader, standardization instructor operator or instructor operator, safety officer, and aircraft commander making recommendation based on firsthand flight experience of the nominee's capabilities and judgment while performing flight duties.

g. Training and evaluation requirements: Commanders may tailor the AC training requirements for operators with significant experience in the type aircraft and unit mission.

h. Administrative considerations: How the AC process-candidate selection through designation in writing by the commander-is conducted should be logically and concisely stated. Include guidance on who may administer the evaluation. If locally produced forms are used, instructions for completing all entries should be addressed.

NO-NOTICE EVALUATION PROGRAM

10-12.   Comprehensive no-notice program ensures high standards of proficiency are maintained in the unit. The commander must state the no-notice policy for the unit (table 10-9).

Table 10-9. Sample SOP–no-notice evaluation program

a. References:
- AR 95-23.
- TC 3-04.63.

b. Purpose: A brief statement of the commander's intent for the unit's no-notice program.

c. Responsibilities: This section identifies the key unit personnel involved in the no-notice program and briefly states their respective responsibilities.

d. No-notice program procedures: This section of the annex establishes the procedures for how no-notice evaluations are conducted, their frequency, and how the unit documents them.

GUNNERY TRAINING

10-13.   A gunnery annex to the unit SOP should be established by all TOE UAS units. The commander establishes the requirements and standards for the unit's gunnery training and qualification program. A gunnery training program based on academic training conducted throughout the training year and hands-on qualification will result in proficient crewmembers (table 10-10).

Table 10-10. Sample SOP–gunnery training

a. References:
- AR 350-1 (as appropriate).
- DA Pam 350-38.
- TC 3-04.45.

Table 10-10. Sample SOP–gunnery training, continued

a. References:
- TC 3-04.45.
- TC 3-04.63.
- DTM 1-1550-696-10.
- AR 385-63.
- Medical 524.

b. Purpose: A clear and concise statement of the commander's intent for the unit gunnery training program.

c. Responsibilities: Identifies key unit gunnery training personnel and their specific responsibilities in the gunnery training program. This section will vary between the type of units with master gunners/standardization instructor operators having prominent duties in UAS unit SOPs.

d. General: The general section should clearly state unit requirements and procedures for gunnery training to include annual and pre-gunnery requirements.

e. Training and execution: This section should outline the specific processes and procedures the unit uses to conduct gunnery training. Using standard Army regulations and publications as references is strongly recommended. Where unit procedures or requirements are more stringent than published guidance, the unit procedure or requirement must be stated.

f. Training and qualification requirements: This section explains training and qualification requirements. Unless a unit has received a waiver to requirements, the references in the following example will apply: DA Pam 350-38 and TC 3-04.45 outline training and qualification requirements. Training readiness condition is a training RL with prescribed standards and resources. HQDA determines training readiness condition assignments required by units to attain and sustain gunnery standards.

g. Weapon boresight (as required): This section should address the location of authorized weapon boresighting sites and their use before firing live ordnance.

h. Range requirements: Range and ammunition supply point requirements are a function of both Army and local regulations. This section should identify applicable regulations and identify key personnel required to be trained or certified for range operations.

i. Aircraft emergencies. For all range operations, a clear and concise emergency plan is required. This section should state the unit's plan and identify emergency landing areas.

j. Required documentation/recordkeeping: Identify those unit requirements to document training that is more stringent then required by regulation or FM. The responsible party for maintaining attendance rosters, evaluations, and reports not otherwise covered by TC 3-04.63 or TC 3-04.45 should be established in this section.

k. Tabs/enclosures: Additional, detailed requirements, checklist, or qualifications should be added as enclosures or tabs to this chapter.

ENVIRONMENTAL TRAINING

10-14.   This section establishes the commander's policy on environmental training. It also establishes requirements for individual and crew training (table 10-11).

Table 10-11. Sample SOP–environmental training

a. References:

AR 350-1 and local command supplements to AR 350-1.

AR 385-10.

TC 3-04.63.

DTM 1-1550-696-10.

FM 3-04.203.

Local policies and regulations.

Table 10-11. Sample SOP–environmental training, continued

b. Purpose: A brief statement of the commander's intent for the unit's environmental flight training program to standardize planning, training, and evaluation requirements for operations in areas where terrain and/or environmentally diverse conditions exist that are other than the normal conditions encountered in the home station local flying area.
c. Responsibilities: This section identifies the key personnel and briefly states their responsibilities for environmental training.
d. General: This section establishes overall policies and procedures used to train environmental flight. When guidance is more restrictive than TC 3-04.63 (this publication) or other regulations, the guidance should be stated.
e. Environment-specific requirements: When specific procedures and policies are required for unique environments, the procedures or policies must be stated.

MISSION COORDINATION TRAINING PROGRAM

10-15.   This section will establish minimum training requirements for the commander's designation as an MC for all multi-aircraft flight operations (table 10-12).

Table 10-12. Sample SOP–mission coordinator's training program

a. References:
• AR 95-23.
• TC 3-04.63.
• FM 1-100, FM 3-04.111, and FM 3-04.126.
• Unit tactical standing operating procedure.
b. Mission commander (MC). The commander will assign an MC for all multi-aircraft missions upon receipt of a warning order. Based on the complexity of the mission, the battalion commander may elevate the selection of this team to the appropriate level to ensure mission success. The standing operating procedures (SOPs) should address the flow of air mission planning to include:
• MC's key tasks and mission contingencies.
• MC's rehearsal, refine the plan, and any contingencies requirements.
• MC's aircrew briefing, rock drill, map rehearsal, and back brief to ensure understanding of the mission by all elements.
c. Prerequisites. Commanders should select MC candidates based on the following qualifications:
• Selected by the unit commander to serve as an MC based on proficiency, experience, and leadership. MC candidates should be aircraft commander.
• Technically and tactically proficient in the unit mission.
• Formal training on the unit risk assessment and approval process
d. Training and evaluation procedures. Commanders may tailor MC training requirements for operators with significant experience in the type of aircraft and unit mission:
• MC candidates will receive training and evaluation on all collective training required in the unit SOP. This training will be executed by a current and qualified MC.
• Understanding mission flow and reacting to contingency operations is the primary focus of MC training. Units may choose to conduct this training in conjunction with other unit training events or while executing real-world missions where the candidate serves as an observer with an experienced MC.
• The size and scope of the mission may require the MCs to execute their duties from a flying position. If the MC is required to perform as part of the crew they will have communication with their other aircrew(s). This can be achieved by Microsoft internet relay chat (MIRC) chat, frequency modulation, through a third party, or other methods. These items will be addressed on the risk assessment worksheet.

Table 10-12. Sample SOP–mission coordinator's training program, continued

e. MC training programs will include participation in mission briefings and rock drills for all MC candidates. These briefings will cover contingency operations to assist in developing skills that broaden the experience of the candidate. Examples of these contingencies include:

- Ground tactical plan (GTP). What is the minimum force to accomplish the mission? Does the plan comply with rules of engagement, regulations, and SOP procedures? Does the GTP expose any of the aircrews to unnecessary risks or hazards?

- Downed aircraft procedures. What is the plan for a downed aircraft? Does this become the main effort? How does the location of the downed aircraft affect the recovery procedures? Are ground security force assets available?

- Fuel and ammunition. What is the fuel required for the mission for all airframes? What is the refuel and rearm plan? What is the backup plan for refuel? Will the unmanned aircraft system assets provide continuous coverage on the objective? What munitions are required for the mission?

- Weather. What is the minimum weather condition required to accomplish the mission? How will weather and illumination impact the mission? What is the maximum illumination? Does the mission time line maximize the effects of illumination, moon angle, and lunar data?

- Crew management. Can the mission be accomplished within duty day and war fighter management requirements? Can the time flow be altered or compressed or eliminate unnecessary events or delays?

- Communications. Has the mission been planned and rehearsed to maximize communications discipline? Can the mission be accomplished if communications systems fail at a critical moment in the mission? Is there communications redundancy? Can the mission go with a complete loss of communications? What over the horizon communication assets are available and what is the communications status of each aircraft?

- Fratricide. How will friendly troops be marked/identified?

- Fires. What are the fire control measures? How are friendly troops on the ground identified? Who has priority of fires? What assets are available for fires?

- Maintenance. What is the aircraft bump plan? Does the maintenance posture meet mission requirements to successfully execute the GTP? What is the downed aircraft recovery team (DART) plan? What is the maintenance recovery plan to meet follow-on mission requirements?

- Miscellaneous. How does aircraft performance limit the ability to accomplish the mission? Will environmental factors limit aircraft capability to accomplish the assigned mission? Have the serials been designed to maximize use of weapons systems, special missions systems, and so forth? What special mission equipment is required and is it available and fully mission capable?

f. MC designation. Operators that complete a formal MC training program will receive an entry in the DA Form 7122-R stating completion of the training. Commanders may designate personnel to perform MC duties without formal training who meet the experience and maturity qualifications outlined above.

MULTI-AIRCRAFT OPERATIONS TRAINING

10-16. In this section, the commander establishes unit policy on multi-aircraft training (for example, relief on station or military assumes responsibility for separation of aircraft [MARSA]). This section also establishes requirements for individual and crew training (table 10-13).

Table 10-13. Sample SOP–multi-aircraft operations training

a. References.
- AR 350-1.
- AR 385-10.
- TC 3-04.63.
- FM 3-04.203.
- The unit tactical standing operating procedures (SOP).

Table 10-13. Sample SOP–multi-aircraft operations training, continued

b. Purpose: A brief statement of the commander's intent for the multi-aircraft flight training policy.

c. Responsibilities: Identifies key personnel and states their responsibilities for relief on station and military assumes responsibility for separation of aircraft flight training.

d. General: This section states the unit's policies and procedures for multi-aircraft flights that are more restrictive than TC 3-04.63 or regulations. When more restrictive measures are used, they must be stated here.

e. Multi-aircraft checklists: Commander's may direct that local checklists or forms be used during multi-aircraft flight briefings and operations. These items must be published in the chapter, if so used.

f. Lost or Disoriented: The unit should establish a lost/disoriented policy that complies with local regulations.

g. Inadvertent instrument meteorological condition (IIMC): Establishes any requirements unique to low visibility environments such as standard IIMC breakup.

h. Emergencies: Establishes procedures to deal with emergencies during multi-aircraft flights.

COMBAT IDENTIFICATION TRAINING INTEGRATION

10-17. Commanders must establish a CID (fratricide) training program to avoid friendly-fire casualties on the battlefield (table 10-14).

Table 10-14. Sample SOP–combat identification training

a. References:
- TC 3-17.
- TC 3-04.63.
- Fratricide: Reducing Self-inflicted Losses. No 92-4, April 1992. Center for Army Lessons Learned.
- TC 3-04.45.

b. Purpose: States the commander's intent for unit combat identification (CID) training program that concentrates on positive target identification, situational awareness, and rules of engagement.

c. Responsibilities: A brief statement of the responsibilities of the commander for administering this fratricide program.

d. General: This section establishes the overall academic and hands-on training requirements and establishes those subjects mandatory for crewmembers covered by the standing operating procedures. Any requirements more restrictive than those in TC or regulation must be stated.

e. CID process: Address training of the CID process of detect, identify, decide, select, assess.

ACADEMIC TRAINING

10-18. To ensure proficient crewmembers, commanders will establish a cyclic and comprehensive academic program to be administered throughout the training year (table 10-15).

Table 10-15. Sample SOP–academic training

a. References:
- TC 3-04.63.
- AR 350-1.
- AR 385-10.
- Local policies and regulations.
- Additional references for academic subjects required by AR 95-23 and appendix A.

b. Purpose: A brief statement of the commander's intent for unit academic training that is conducted during the training year.

Table 10-15. Sample SOP–academic training, continued

c. Responsibilities: Identifies the key personnel and their responsibilities for annual academic training. d. Annual academics training program: This section establishes the procedures to be used to accomplish a schedule of continuing academic training for unit members. It should outline procedures and policies that unit members must perform to accomplish the training. This section should also establish the procedure for documenting attendance and performing make-up training.

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR, AND HIGH-YIELD EXPLOSIVE TRAINING AND EVALUATION

10-19.   Crewmembers must be proficient in operating in CBRNE battlefield environments. In this section, the commander establishes the unit training program that trains crewmembers to standard and maintains proficiency in CBRNE operations (table 10-16).

Table 10-16. Sample SOP–CBRNE training and evaluation

a. References.
    • TC 3-04.63.
    • Aircraft operator's manual (aircraft equipped and unmanned aircraft system equipped with chemical, biological, radiological, nuclear, and high-yield explosives [CBRNE]-related equipment).
    • Unit tactical standing operating procedure.
 	
b. Purpose: A statement of the commander's intent for unit CBRNE flight training and evaluation program.
 	
c. Academic training: This section establishes the lessons and frequency of academic training for CBRNE flight training. It should also address documentation of crewmember training on CBRNE subjects.
 	
d. Flight training: This section establishes the flight training requirements procedures used during CBRNE training. Where the unit's requirements or procedures are more restrictive than TC 3-04.63, the requirements and procedures must be stated. This section should address initial and continuation training. It should also address evaluations.

INSTRUMENT FLIGHT TRAINING

10-20.   The ability to conduct operations in instrument flight conditions requires constant training to maintain proficiency. In some units, UAS-instrument flight is not normally considered a top priority. To ensure that crewmembers maintain proficiency in instrument operations, commanders may choose to emphasize instrument flight training in the ATP (table 10-17).

Table 10-17. SOP example–instrument flight training

a. References:
    • AR 95-23.
    • FM 3-04.240.
    • Aeronautical information manual.
    • Federal Aviation Regulations.
    • DOD flight information publications.
    • Other appropriate local regulations and publications.
 	
b. Purpose: A brief statement of the commander's intent for the unit's instrument flight training chapter.
 	
c. Responsibilities: Identifies the responsibilities of unit members for instrument flight training.
 	
d. Training: Establishes the unit policy on instrument flight training. Where there is more restrictive guidance and regulations than TC 3-04.63, the policy and requirements must be stated. This section should address individual, crew, and continuation training.

Chapter 11

Aircrew Training Program Process Flow Charts

11-1. The unit ATP is not a simple or intuitive process. There are numerous requirements and often qualifying conditions on which additional requirements are based. To assist the unit ATP implementers, this chapter contains process flow charts to help UAS Soldiers and their commanders understand the flow of decisions and actions for specific instances. These flow charts are not directive in nature; they are intended as a guide in using this publication to conduct certain processes that arise while implementing a unit ATP (figures 11-1 through 11-5, pages 11-2 through 11-6).

11-2. These flow charts are not inclusive of all situations that might arise while managing an ATP. ATP implementers must read the applicable sections of the TC.

> *Note.* Waivers are not addressed in the flow charts. Waiver requests for this publication's requirements must be evaluated on the facts unique to each circumstance.

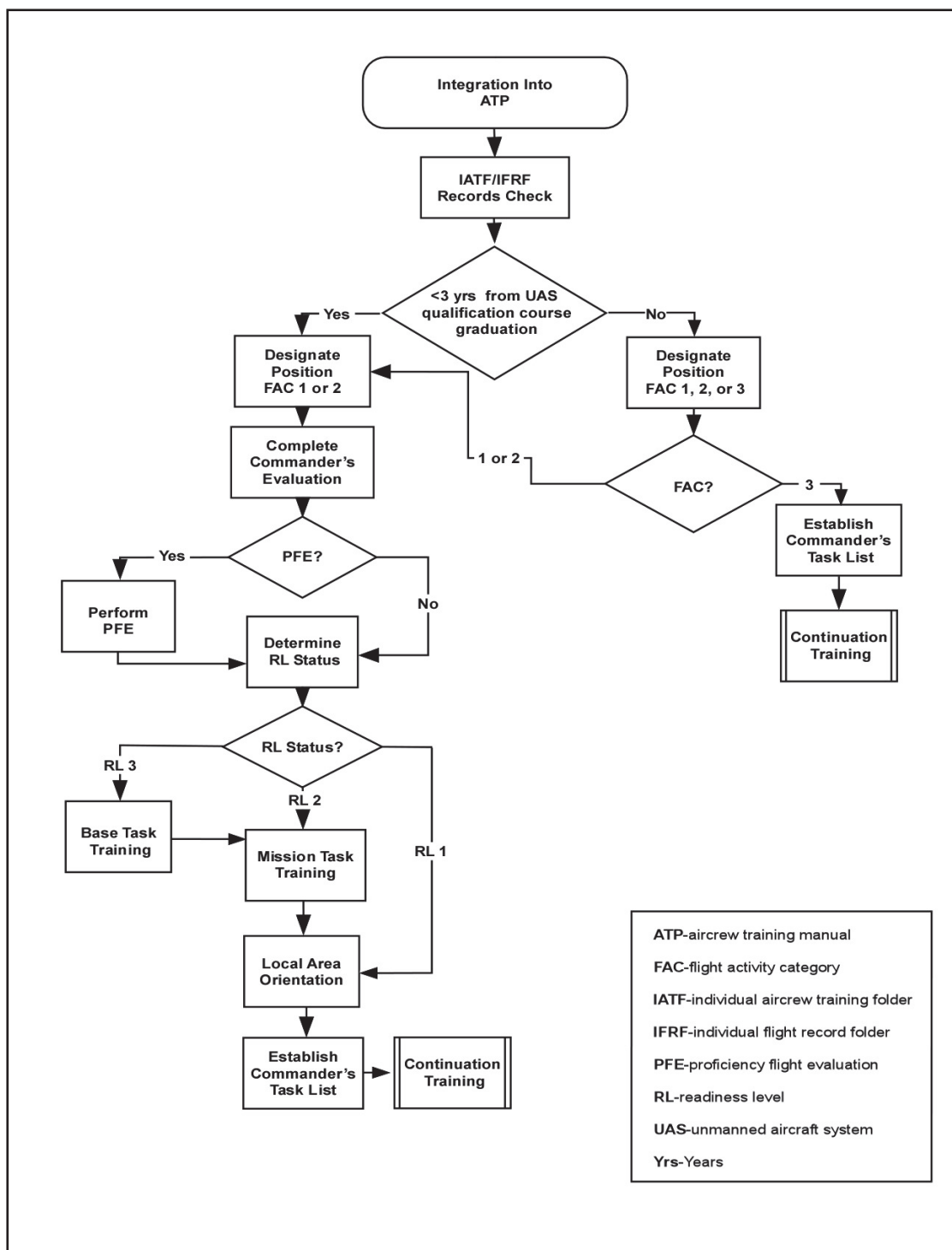**Figure 11-1. Integration into unit**
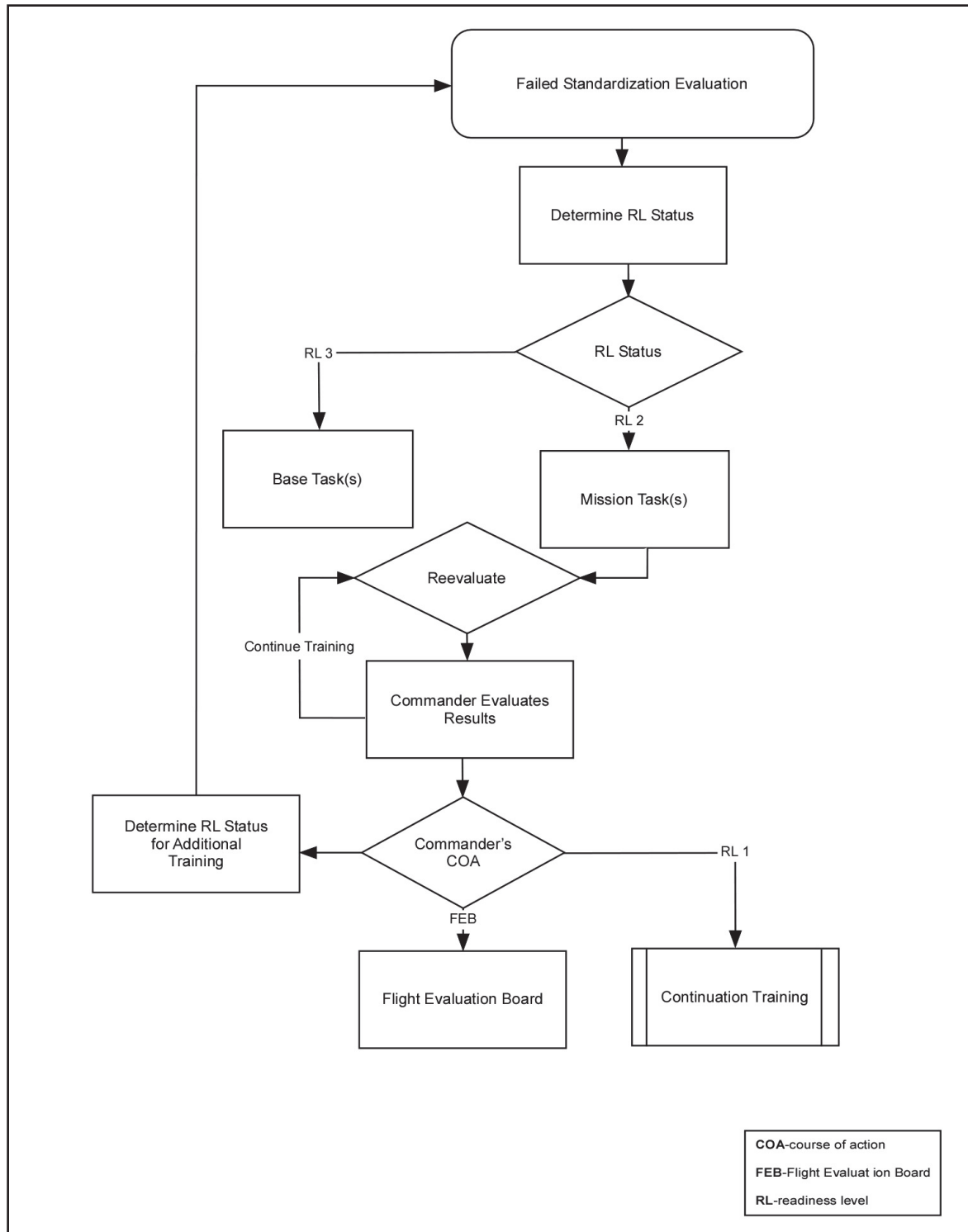
Figure 11-2. Failed standardization evaluation

Refresher Training Required

RL 3

Base Task Training

RL 2

Mission Task Training

RL 1

Continuation Training

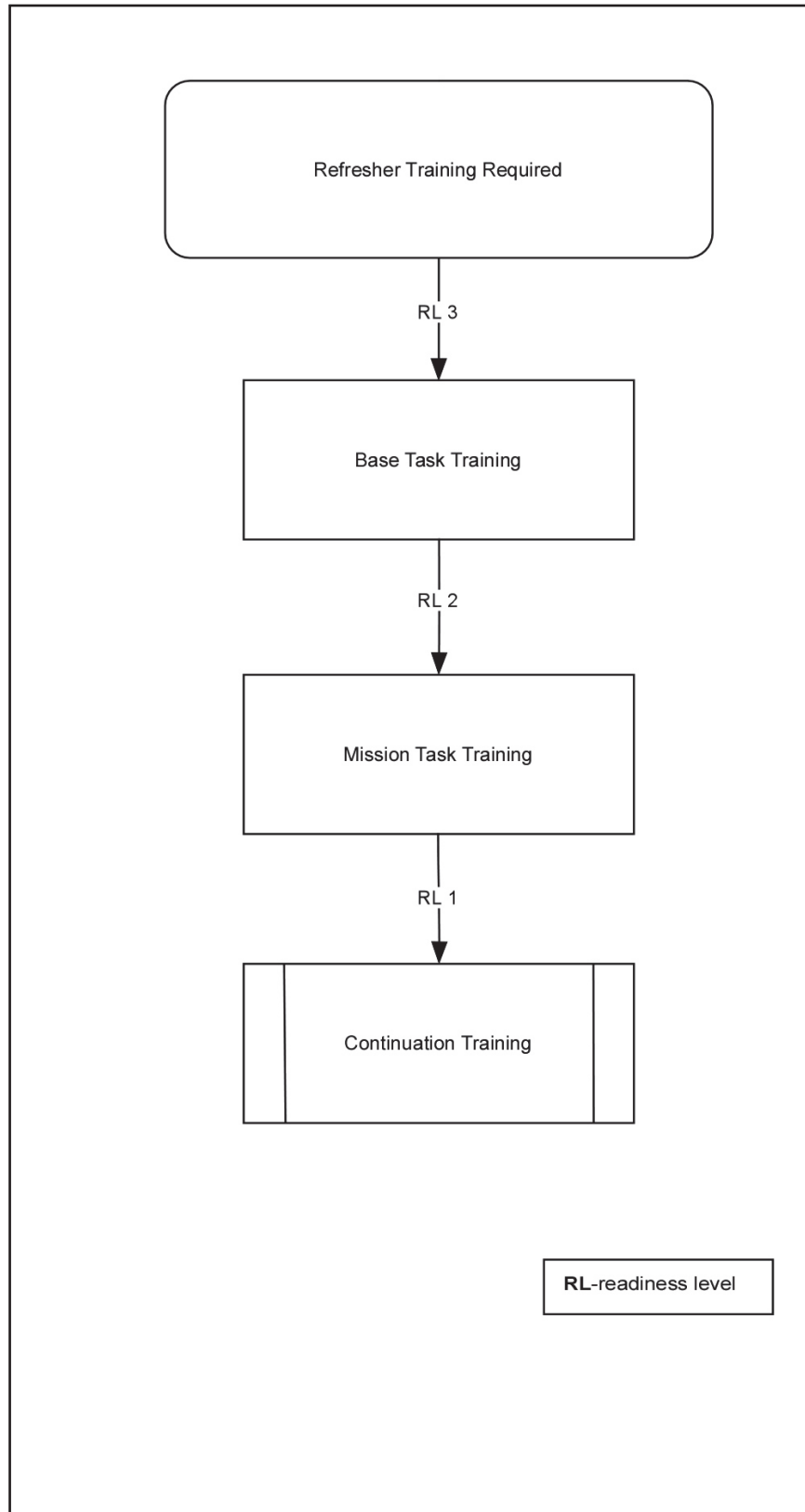**RL**-readiness level

Figure 11-3. Refresher training

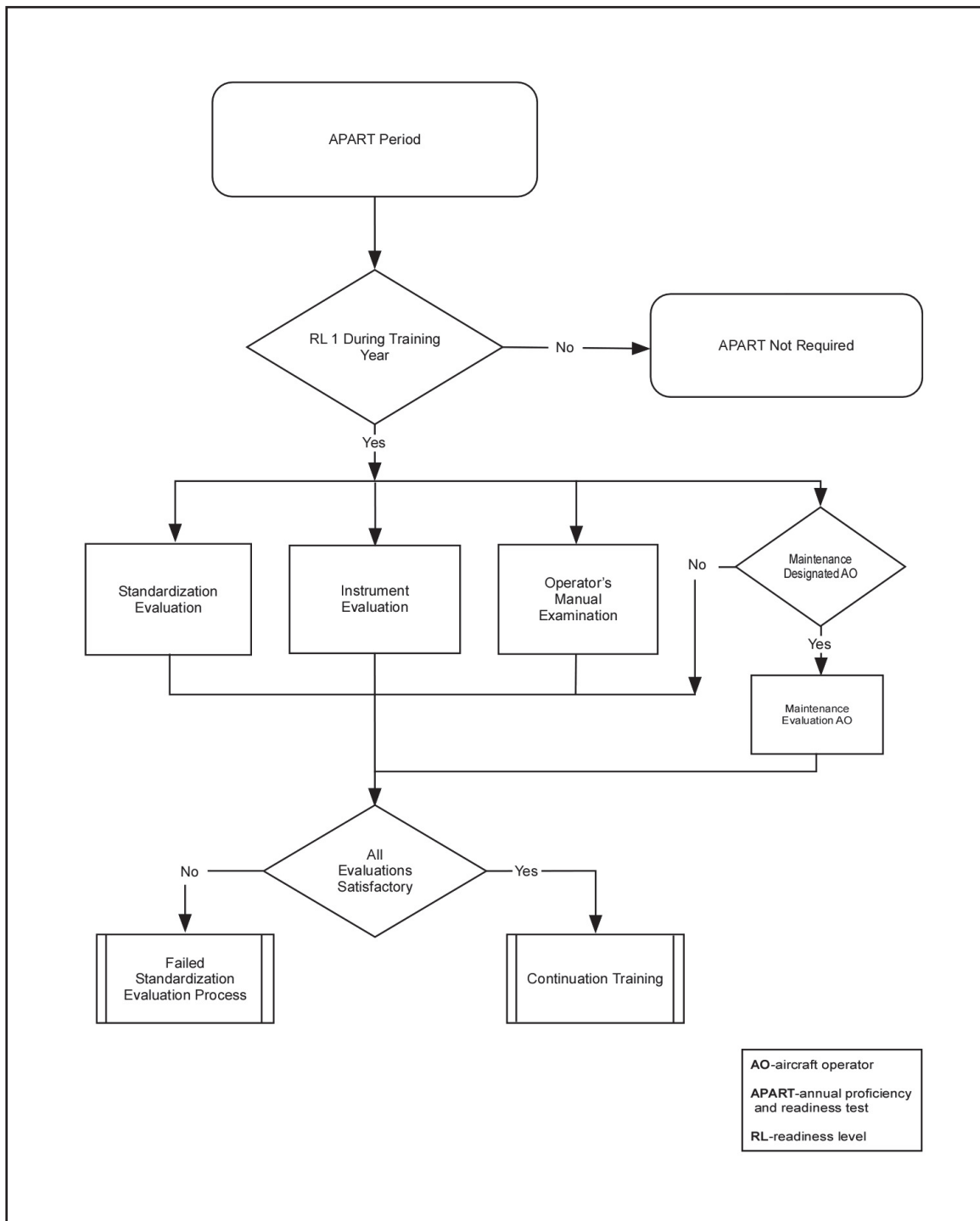**Figure 11-4. Annual proficiency and readiness test period**
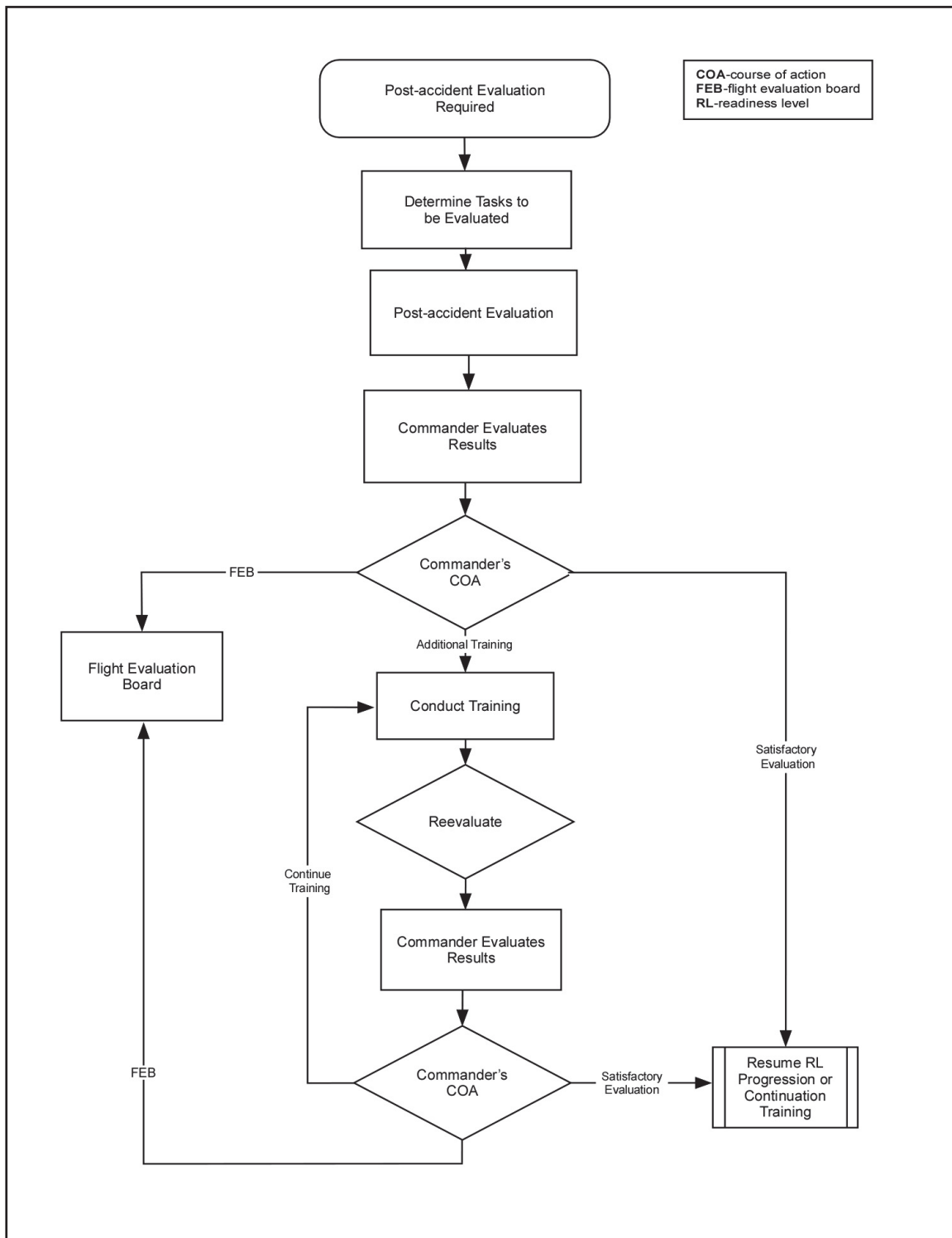
Figure 11-5. Post-accident evaluation

MQ–1C Gray Eagle Aircrew Training Program Requirements

FLIGHT HOUR MINIMUMS

A-1. Semi-annual aircraft flying-hour requirements. UTs, SOs, and IOs may credit hours they fly while performing assigned duties at any crew position toward their semi-annual flying-hour requirement.

- FAC 1—12 hours, 4 hours of which must be flown in each crew station.
- FAC 2—6 hours, 2 hours of which must be flown in each crew station.
- FAC 3—No crew duties authorized with Army UAS.

A-2. Semi-annual simulation device flying-hour requirements. UTs, SOs, and IOs may credit those hours they fly while performing assigned instructor duties at any crew position toward their semi-annual simulation device flying-hour requirements. FAC 1 UACs may apply a maximum of 20 aircraft hours flown in a semi-annual period toward that period's semi-annual flight simulator requirements. FAC 2 UACs may apply a maximum of 8 aircraft hours flown in a semi-annual period toward that period's semi-annual simulation requirements. A minimum of 4 hours (2 hours in each crew station) must be completed in the flight simulator for FAC 1 and FAC 2 operators (this can primarily be used to train emergencies).

- FAC 1—24 hours, 8 hours of which must be flown in each crew station.
- FAC 2—12 hours, 4 hours of which must be flown in each crew station.
- FAC 3—06 hours, 2 hours of which must be flown in each crew station.

CURRENCY REQUIREMENTS

A-3. To be considered current, a UAC must—

- Perform, every 60 consecutive days, a takeoff and landing while operating the UAS or an approved flight simulator from the A seat.
- Perform, every 120 consecutive days, a takeoff and landing while operating the UAS from the A seat.

A-4. The UAC whose currency has lapsed must complete a proficiency flight evaluation IAW chapter 3 of this TC. Simulators may not be used to reestablish currency.

Note. IOs/SOs are not authorized to count flights while not physically on the controls to meet currency requirements.

MQ–1C TASK LIST

TASK NUMBER

A-5.   Each TC training task is identified by a 10-digit training development capabilities number. The first three digits of each task in this appendix are 011 (United States Army Aviation School); the second three digits are 630 (MQ–1C UAS). For convenience, only the last four digits are listed in this TC. The last four digits of—

- Base tasks are assigned 1000-series numbers (table A-1, page A-2).
- Mission tasks are assigned 2000-series numbers (table A-2, page A-3).
- Additional tasks are assigned 3000-series numbers.

> *Note.* Additional tasks are designated by the commander as mission essential are not included in this appendix. The commander will develop conditions, standards, and descriptions for those additional tasks.

● Maintenance tasks are assigned 4000-series numbers (table A-3, page A-3).

TASK TITLE

A-6.   The task title identifies a clearly defined and measurable activity. Titles may be the same for different UA but the tasks are written for the specific UA.

CONDITIONS

A-7.   The conditions statement specifies the conditions under which the task will be performed. Conditions include common conditions listed below and may include task specific conditions. Conditions describe important aspects of the performance environment. All conditions must be met before task iterations can be credited.

SO/IO

A-8.   The following tasks require an SO or IO for training/evaluation:
● Task 1032, Perform Radio Communication Procedures.
● Task 1071, React to System Emergency.
● Task 1081, Perform Automatic Take-off and Landing System Abort.
● Task 1185, React to Inadvertent Instrument Meteorological Condition.

ANNUAL TASK AND ITERATION REQUIREMENTS

A-9.   The required annual task and iterations are specified in chapter 2.

Table A-1. Unmanned aircraft crewmember base task list

Task	Title	Instruments	CBRNE	EVAL
1001	Conduct an Unmanned Aircraft System Crew Mission Brief	X		S, C
1004	Plan a Visual Flight Rules Flight			S
1007	Plan an Instrument Flight Rules Flight	X		S, I
1010	Prepare a Performance Planning Card	X		S
1022	Perform Exterior Inspection Procedures	X		S, C
1024	Perform Engine Start/System Check	X		S, C
1032	Perform Radio Communication Procedures	X		S, I, C
1034	Perform Unmanned Aircraft Taxi	X		S, C
1035	Perform Automatic Take-off and Landing System Takeoff	X		S, C
1045	Perform Flight in Knobs Mode	X		S, C
1046	Perform Dead Reckoning Navigation			S
1048	Perform Fuel Management Procedures	X		S
1050	Perform Flight Utilizing Automatic Flight Modes			S

Table A-1. Unmanned aircraft crewmember base task list, continued

Task	Title	Instruments	CBRNE	EVAL
1071	React to System Emergency	X		S, I, C
1081	Perform Automatic Take-off and Landing System Abort	X		S, C
1086	Perform Automatic Take-off and Landing System Landing	X		S, C
1111	*Track a Target			S
1116	*Conduct Reconnaissance Operations			S
1122	Perform Target Mark/Store Function			S
1123	Configure Communications Relay Package			S
1139	*Perform Payload Operational Checks			S
1142	Conduct Digital Communications			S
1175	Perform Transfer Procedures			S
1185	React to Inadvertent Instrument Meteorological Condition	X		I
1254	Perform Instrument Flight Procedures	X		I
1300	*Operate the Optical Sensors Payload(s)			S
1402	Perform Mission Planning Procedures			S
1405	Transmit a Tactical Report			S
1416	Perform Weapon Initialization Procedures			S
1458	Engage Target with Point Target Weapon System			S
1471	Perform Target Handover			S
1473	Perform Call for/Adjust Indirect Fire			S
1802	Perform After Landing Procedures	X		S, C

Key
C —Minimum tasks for currency proficiency flight evaluation (the commander may include additional tasks to complete currency evaluation requirements).
EVAL —Mandatory annual proficiency and readiness test.
S —Minimum tasks for standardization flight evaluation.
I —Instrument flight.
X —Mandatory annual task iteration requirement.
ATLS—Automatic takeoff and landing system.
IIMC—Inadvertent instrument meteorological condition.
Notes:
(*) Payload tasks must be completed in all payload modes.
Merged rows (except for payload tasks) indicate task can be completed in either mode/seat.
Further information on CBRNE tasks are described in chapter 2.

Table A-2. Unmanned aircraft crewmember mission task list

Task	Title
2170	Conduct Levels of Interoperability with Cooperative Element
2305	Operate Synthetic Aperture Radar
2307	Operate Ground Moving Target Indicator
2476	Perform Airborne Data Relay Mission

Table A-3. Unmanned aircraft crewmember maintenance functional checks task list

Task	Title
4001	Perform Prior to Maintenance Functional Checks Inspection (Ground/Airborne)
4077	Perform Post-Maintenance Functional Checks Inspection (Ground/Airborne)
4101	Perform Maintenance Functional Checks (Ground)
4102	Perform Maintenance Functional Checks (Airborne)

TASK 1001

Conduct an Unmanned Aircraft System Crew Mission Brief

CONDITIONS: Prior to ground or flight operations with an MQ–1C unmanned aircraft system (UAS) with all crewmembers present, given DA Form 5484 (Mission Schedule/Brief) and/or unit-approved crew briefing checklist.

STANDARDS:

1. The aircraft commanders (ACs):

    a.   Will participate in the mission approval process.

    b.   Will be briefed by the mission briefing officer on mandatory and mission-related items detailed on DA Form 5484 and will verbally acknowledge full understanding of the assignment of duties and responsibilities.

    c.   Without error, will brief the assigned crew on the mandatory and mission-related items detailed on DA Form 5484.

    d.   Assign crewmember mission duties and responsibilities IAW the crew briefing CL.

    e.   Have the crewmembers acknowledge that they fully understand the assignment of duties and responsibilities.

2. The operators and crew chiefs (CEs):

    a.   Will be briefed by the AC and will back brief the AC on mandatory and mission-related items detailed on DA Form 5484.

    b.   Will verbally acknowledge full understanding of the assignment of duties and responsibilities.

DESCRIPTION:

1. Crew actions:

    a.   A designated briefing officer/noncommissioned officer (NCO) will evaluate and brief key areas of the mission to the AC IAW AR 95-23. The AC will acknowledge a complete understanding of the mission brief and initial DA Form 5484.

    b.   The AC has overall responsibility for the crew mission briefing. The AC may direct the other crewmembers to perform all or part of the crew briefing.

    c.   The AC will ensure all aircraft system information is correct. The AC will also ensure that the crew is current and qualified to perform the mission.

    Note. An essential element of the mission briefing is the crew-level after action review that follow the mission's conclusion

    d.   The crewmembers being briefed will back brief the AC and address any questions to the briefer and will acknowledge that they understand the assigned actions, duties, and responsibilities. Lessons learned from previous debriefings should be addressed as applicable during the crew briefing as well as time and location of a crew after action review (AAR) upon completion of mission.

2. Procedures. Brief the mission using a unit-approved crew mission briefing CL. Table A-4, page A-6, shows a suggested checklist format for a MQ–1C Gray Eagle UAS mission briefing CL. Identify mission and flight requirements that will demand effective communication and proper sequencing and timing of actions by the crewmembers.

ENVIRONMENTAL CONSIDERATIONS: During mission planning, stay cognizant of weather conditions to include temperatures, icing, winds, precipitation, thunderstorms, sunlight and moonlight along your designated route and area of operation.

TRAINING AND EVALUATION REQUIREMENTS:
1. Training will be conducted academically.
2. Evaluation will be conducted academically.

REFERENCES: Appropriate common references, AR 95-23, DA Form 5484 or approved unit briefing sheet, FM 3-04.120, FM 3-04.203, FM 3-04.300, ADP 5-0, ATP 5-19 , and Unit SOP.

> *Note.* If DA Form 5484 is used as the unit briefing sheet, it will be filled out in accordance with AR 95-23, appendix B.

Table A-4. Sample MQ–1C unmanned aircraft system crew mission briefing checklist

1. Mission overview:
   - Date/time.
   - Operation name.
   - Operation order #.
   - Task organization.
   - Situation.
   - Enemy forces/friendly forces.
   - Weather.
   - Mission.
   - Execution.
   - Scheme of support.
   - Ingress/egress.
2. Specific instructions to subordinate units timeline:
   - Takeoff aircrew/ground crew:
   (1) Exterior inspection (aircraft #).
   (2) Weather decision.
   (3) Communication check.
   (4) Engine start.
   (5) Weapons configuration.
   (6) Communication checks.
   (7) Takeoff.
   (8) Landing aircrew/ground crew.
   (9) After landing procedures (aircraft #).
   - Alternate aircraft exterior inspection (aircraft #):
   (1) Control transfer.
   (2) On station.
   (3) First time on target.
   (4) Relief on station.
   (5) End of mission.
   (6) Debrief time/location.
   (7) Data reporting/recording.
   (8) Type of takeoff.
3. Coordinating instructions:
   - Airspace control measures/spins/tap.
   - Release authority for lethal payload.
   - Abort criteria/warnings:
   (1) Indicated airspeed.

Table A-4. Sample MQ–1C unmanned aircraft system crew mission briefing checklist, continued

      (2) Altitude.

      (3) Fuel.

      (4) Weather requirements.

      (5) Aircraft.

      (6) Mission.

      (7) Jettison point.

      (8) Return home point.

- Relief on station.
- Return-home/loss of link plan:

      (1) Return home altitude.

      (2) Return home airspeed.

      (3) Return home holding altitude.

- Instrument meteorological conditions recovery.

4. Service and support:
   - Downed aircraft recovery team (DART) team leader.
   - DART primary recovery team.
   - DART alternate recovery team.
   - DART location and frequency.
   - Refuel location.
   - Bingo fuel.
   - Medical evacuation frequency.

5. Command and signal:
   - Succession of command.
   - Signal:

      (1) Primary internal frequency.

      (2) Alternate frequency.

      (3) Ground control frequency ultra-high frequency/very high frequency (UHF/VHF).

      (4) Control tower frequency UHF/VHF.

      (5) Command frequency.

      (6) Supported unit frequencies.

   - Datalink frequency:

      (1) Uplink frequency.

      (2) Downlink frequency.

   - Remote video terminal (RVT):

      (1) RVT frequency.

      (2) Ground control station/RVT location.

   - Identification friend or foe codes.
   - LASER codes.

6. Crew actions, duties, and responsibilities (elements of crew coordination):
   - Communicate positively.
   - Direct assistance.
   - Announce actions.
   - Offer assistance.
   - Risk assessment and mitigation.
   - Additional instructions.

TASK 1004

Plan a Visual Flight Rules Flight

CONDITIONS: Prior to visual flight rules (VRF) flight of the MQ–1C unmanned aircraft, given access to weather information, notices to airmen (NOTAMs), flight planning aids, necessary charts, forms, publications, and weight and balance information.

STANDARDS:

1. Determine whether the aircrew and aircraft are capable of completing the assigned mission.

2. Determine whether the flight can be performed under VFR per AR 95-23, applicable code of federal regulations (CFRs)/host nation regulations, and local regulations and standing operating procedures (SOPs).

3. Determine the correct departure, en route, and destination procedures.

4. Select route(s) and altitudes that avoid hazardous weather conditions; **do not** exceed aircraft or equipment limitations and conform to VFR cruising altitudes per Department of Defense (DOD) flight information publication (FLIP).

5. Determine the fuel required per AR 95-23.

6. Complete and file the flight plan per AR 95-23 and DOD FLIP.

7. Perform mission risk assessment per unit SOP.

DESCRIPTION:

1. Crew actions:

   a.   The aircraft commander (AC) will ensure that the crew is current and qualified to perform the mission, and that the aircraft is equipped to accomplish the assigned mission. The AC may direct the crew to complete some portions of the VFR flight planning.

   b.   The crew will complete all assigned elements and report the results to the AC.

2. Procedures. Using appropriate military, Federal Aviation Administration (FAA), or host-country weather facilities, obtain information about the weather. After ensuring that the flight can be completed under VFR, check NOTAMs, chart update manuals, and other appropriate sources for any restrictions that may apply to the flight. Obtain navigational charts that cover the entire flight area, and allow for changes in routing that may be required because of weather or terrain. Select the course(s) and altitude(s) that will best facilitate mission accomplishment. Determine the magnetic heading, ground speed, and estimated time en route for each leg. Compute total distance, flight time, and calculate the required fuel using the appropriate charts in DTM 1-1550-696-10. Determine whether the duplicate weight and balance forms in the aircraft logbook apply to the aircraft configuration. Verify that the aircraft weight and center of gravity will remain within allowable limits for the entire flight. Complete the flight plan and file it with the appropriate agency.

NIGHT CONSIDERATIONS: Checkpoints used during day may not be suitable during night conditions.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted academically.

2. Evaluation will be conducted academically.

REFERENCES: Appropriate common references, AR 95-23, DOD flight information publication (en route), VFR supplement, DOD flight information publication general planning, FM 3-04.203, Local SOPs and regulations, and Title 14 CFR/Host nation regulation.

TASK 1007

Plan an Instrument Flight Rules Flight

CONDITIONS: Prior to instrument flight rules (IFR) flight of the MQ–1C unmanned aircraft, given access to weather information, notices to airmen (NOTAMs), flight planning aids, necessary charts, forms, publications, and weight and balance information.

> *Note.* The use of computer flight planning programs is authorized. The crew should verify the information with applicable charts before using.

STANDARDS:

1. Determine whether the aircrew and aircraft are capable of completing the assigned mission.

2. Determine whether the flight can be performed under instrument flight rules (IFR) according to AR 95-23 and applicable Federal Aviation Regulations (FARs)/host-nation regulations, local regulations, and standing operating procedures (SOPs).

3. Determine the departure, en route, and destination procedures.

4. Select route(s) and altitudes that avoid hazardous weather conditions, **do not** exceed aircraft or equipment limitations, and conform to IFR cruising altitudes per Department of Defense flight information publication (DOD FLIP).

5. If off airway, determine the course(s) ±5 degrees.

6. Select an approach that is compatible with the weather, approach facilities, and aircraft equipment.

7. Determine the fuel required per AR 95-23 and FM 3-04.240.

8. Complete and file the flight plan per AR 95-23 and the DOD FLIP.

9. Perform mission risk assessment per unit SOP.

DESCRIPTION:

1. Crew actions:

   a**.** The aircraft commander (AC) will ensure all pre-mission planning items according to AR 95-23 are completed and that the aircraft is properly equipped to accomplish the assigned mission. The AC may direct the crew to complete some portions of the IFR flight planning.

   b**.** The crew will complete the assigned elements and report the results to the AC.

2. Procedures. Using appropriate military, Federal Aviation Administration, or host-country weather facilities, obtain information about the weather. Compare destination forecast and approach minimums, and determine whether an alternate airfield is required. Check the NOTAMs and other appropriate sources for any restrictions that may apply to the flight. Obtain navigation charts that cover the entire flight area, and allow for changes in routing or destination that may be required. Select the route(s) or course(s) and altitude(s) that will best facilitate mission accomplishment. When possible, select preferred and alternate routing. Select altitude(s) that minimize flight in the icing level and turbulence; are above minimum IFR altitudes; conform to the semicircular rule, when applicable; and do not exceed aircraft or equipment limitations. Compute the total distance and flight time, and calculate the required fuel. Use the appropriate charts, the operator's manual, or a computer flight-planning program, if applicable. If a computer flight-planning program is used, verify aircraft performance data with the operator's manual before using. Complete the appropriate flight plan and file it with the appropriate agency.

NIGHT CONSIDERATIONS: Not applicable.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted academically.

2. Evaluation will be conducted academically.

REFERENCES: Appropriate common references, AR 95-23, FM 3-04.203, FM 3-04.240, DOD flight information publication (en route), IFR supplement, DOD flight information publication general planning, Local SOPs and regulations, and Title 14 CFR/Host nation regulations.

TASK 1010

Prepare a Performance Planning Card

CONDITIONS: Given a completed DD Form 365-4 (Weight and Balance Clearance Form F-Transport/Tactical), DD Form 175-1 (Flight Weather Briefing) containing environmental conditions at takeoff, en route, and landing, DTM 1-1550-696-10, and a blank DA Form 7740 MQ–1C performance planning card [PPC] (figures A-1 and A-2, pages A-12 and A-13).

STANDARD: Complete the PPC according to procedures given in DTM 1-1550-696-10, current interim statement of airworthiness qualification (ISAQ)/airworthiness release instructions, and the description that follows.

DESCRIPTION:

1. Crew actions:

    a.   The aircraft commander (AC) will compute or direct other crewmembers to compute the performance planning card IAW the instructions provided as follows.

    b.   The AC will verify that the aircraft meets the performance requirements necessary to complete the mission and will brief the other crews. The AC must ensure that aircraft limitations and capabilities are not exceeded.

    c.   The crew will assist the AC as directed.

2. Procedures. The PPC is an aid for organizing takeoff and landing planning data. The MQ–1C PPC card provides an easy reference for takeoff, takeoff emergencies, cruise, landing emergency, and landing at the destination. This form is a guide to expected aircraft performance and will be computed prior to takeoff and should be updated prior to landing.

    Note: It is a primary risk management tool for both the crew and commander to determine the MAX acceptable payloads, minimum runway lengths, and other associated risks.

3. Compute departure, and en route data. Compute arrival data if environmental conditions at destination are higher by 10°C, or 1000 feet PA from takeoff point. The AC must be aware that a significant increase in the above environmental conditions may decrease aircraft performance and require a change in the planned mission. Instructions for calculating performance information are given in the aircraft operator's manual and supplemented by the instructions below.

    Note: The same PPC will suffice for consecutive takeoffs and landings if the crew verifies that the planned environmental conditions (pressure, altitude, and temperature) do not degrade performance.

MQ-1C PERFORMANCE PLANNING CARD
For use of this form, see TC 3-04.63; the proponent agency is TRADOC.

DEPARTURE

ENGINE LITER CONFIGURATION:	1	PAYLOAD DRAG INDEX (PDI):	2
T/O FREE AIR TEMP °C:	3	T/O DA:	4
PLANNED AIRCRAFT T/O WEIGHT:	5	PLANNED FUEL T/O WEIGHT:	6
RUNWAY WIND COMPONENT:	7	T/O GROUND RUN WITH ATLS:	8
T/O GROUND RUN FOR RUNWAY SLOPE:	9	T/O DISTANCE > 50-FT OBSTACLE WITH ATLS:	10
T/O ABORT DISTANCE WITH ATLS:	11	ROTATION SPEED:	12
LIFT-OFF SPEED:	13	SPEED FOR BEST RATE OF CLIMB (V_y):	14

CRUISE DATA

MAX TEMP °C:	15	MAX DA:	16	MAX ALTITUDE:	17
FUEL TO ALTITUDE :	18	TIME TO ALTITUDE:	19	DISTANCE TO ALTITUDE:	20
BEST (V_y) @ MAX CONTINUOUS POWER:		21	CLIMB GRADIENT @ MAX CONTINUOUS POWER:		22
MAX TRUE AIRSPEED:	23	STALL SPEED:	24	SERVICE CEILING:	25
BEST RANGE SPEED:		26	SPECIFIC RANGE @ BEST RANGE SPEED:		27
SPECIFIC RANGE WITH INDICATED AIRSPEED:		28	FUEL FLOW @ BEST ENDURANCE SPEED:		29
BEST ENDURANCE SPEED:		30	TIME ON STATION VS MISSION RADIUS:		31

IN-FLIGHT FUEL CONSUMPTION CHECK(S)   **NOTES**

#	FUEL AMOUNT	START TIME	STOP TIME	FUEL AMOUNT	BURN RATE
1	32	33	34	35	36
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

ARRIVAL DATA

LANDING TEMP °C :	37	LANDING DA:	38	LANDING GROSS WT:	39
DESCENT RATE :	40				
DESCENT DISTANCE :	41	DESCENT TIME:	42	PROJECTED FUEL USED:	43
ENGINE OUT GLIDE RANGE:		44	ENGINE OUT BEST RANGE AIRSPEED:		45
APPROACH AIRSPEED WITH ATLS:		46	APPROACH STALL AIRSPEED WITH ATLS:		47
LANDING GROUND ROLL WITH ATLS:		48			
LANDING GROUND ROLL CORRECTION FOR SLOPE:		49	LANDING GROUND ROLL CORRECTION FOR RCR:		50
LANDING DISTANCE > 50-FT OBSTACLE WITH ATLS:		51			

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APD LC v1.00

Figure A-1. Sample DA Form 7740 (front)

Notes:
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SAMPLE

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Figure A-2. Sample DA Form 7740 (back)

4. Supplemental instructions.

- **Item 1–Engine Liter Configuration.** Record aircraft engine type (liter size).
- **Item 2–Payload Drag Index (PDI).** Record the payload drag index of the current aircraft configuration IAW the operator's manual performance charts based on installed external payloads that will impact aircraft performance.
- **Item 3–Takeoff (T/O) Free Air Temperature**. Record the takeoff free air temperature at the departure point for the estimated time of departure.

- **Item 4–Takeoff (T/O) Density Altitude (DA).** Record the takeoff density altitude at the departure point for the estimated time of departure. Note: If only available data is the free air temperature and pressure altitude (PA), then calculate and record the predicted density altitude results IAW the operator's manual performance charts.
- **Item 5–Planned Aircraft Takeoff (T/O) Weight**. Record the gross weight of the aircraft at departure.
- **Item 6–Planned Fuel Takeoff (T/O) Weight.** Record the estimated fuel required (including reserved) at takeoff to complete the mission.
- **Item 7–Runway Wind Component.** Record the predicted runway wind component for takeoff based on the calculation results IAW the operator's manual performance charts.
- **Item 8–Takeoff (T/O) Ground Run With ATLS**. Record the predicted length of runway required for takeoff ground run based on the calculation results IAW the operator's manual performance charts.
- **Item 9–Takeoff Ground Run for Runway Slope.** Record the predicted takeoff ground run correction for runway slope based on the calculation results IAW the operator's manual performance charts.
- **Item 10–Takeoff (T/O) Distance Greater Than (>) 50-Foot (FT) Obstacle With ATLS**. Record the predicted takeoff distance needed to clear a 50-foot obstacle when taking off from a level runway based on the calculation results IAW the operator's manual performance charts.
- **Item 11–Takeoff (T/O) Abort Distance With ATLS.** Record the predicted distance the aircraft will need to accelerate to rotational speed and then come to a complete stop based on the calculation results IAW the operator's manual performance charts.
- **Item 12–Rotation Speed.** Record the predicted rotation speed for takeoff based on the calculation results IAW the operator's manual performance charts.
- **Item 13–Lift-Off Speed**. Record the predicted lift off speed for takeoff based on the calculation results IAW the operator's manual performance charts.
- **Item 14–Speed for Best Rate of Climb (Vy).** Record the predicted speed for best rate of climb during takeoff based on the calculation results IAW the operator's manual performance charts.
- **Item 15–Maximum (MAX) Temperature.** Record the max free air temperature for the duration of the mission.
- **Item 16–Maximum (MAX) Density Altitude (DA).** Record the forecasted max density altitude for the duration of the mission. Note: If only available data is the free air temperature and pressure altitude (PA) then calculate and record the predicted density altitude results IAW the operator's manual performance charts.
- **Item 17–Maximum (MAX) Altitude.** Record the max altitude for the duration of the mission.
- **Item 18–Fuel to Altitude.** Record the predicted fuel needed to reach the desired mission altitude based on the calculation results IAW the operator's manual performance charts.
- **Item 19–Time to Altitude.** Record the estimated time needed to reach the desired mission altitude based on the calculation results IAW the operator's manual performance charts.
- **Item 20–Distance to Altitude.** Record the predicted distance needed to reach the desired mission altitude based on the calculation results IAW the operator's manual performance charts.
- **Item 21–Best (Vy) at Maximum (MAX) Continuous Power.** Record the predicted best rate of climb needed that provides the most altitude gain to reach cruise/mission altitude based on the calculation results IAW the operator's manual performance charts.
- **Item 22–Climb Gradient at (@) Maximum (MAX) Continuous Power.** Record the predicted climb gradient at maximum continuous power needed to reach the desired mission altitude based on the calculation results IAW the operator's manual performance charts.
- **Item 23–Maximum True Airspeed.** Record the predicted maximum true airspeed (possible in flight level) based on the calculation results IAW the operator's manual performance charts.
- **Item 24–Stall Speed.** Record the predicted maximum stall speed based on the calculation results IAW the operator's manual performance charts.

- **Item 25–Service Ceiling.** Record the predicted maximum service ceiling (100 feet/minute climb rate) based on the calculation results IAW the operator's manual performance charts.
- **Item 26–Best Range Speed.** Record the predicted best range speed based on the calculation results IAW the operator's manual performance charts.
- **Item 27–Specific Range at (@) Best Range Speed.** Record the predicted specific range (nautical miles per pound of fuel burned) at best range speed based on the calculation results IAW the operator's manual performance charts.
- **Item 28–Specific Range With Indicated Airspeed**. Record the predicted specific range for a given indicated airspeed (KIAS) based on the calculation results IAW the operator's manual performance charts.
- **Item 29–Fuel Flow at (@) Best Endurance Speed.** Record the predicted fuel flow at best endurance speed based on the calculation results IAW the operator's manual performance charts.
- **Item 30–Best Endurance Speed.** Record the predicted best endurance speed based on the calculation results IAW the operator's manual performance charts.
- **Item 31–Time on Station Versus (VS) Mission Radius.** Record the predicted time on station based on the calculation results IAW the operator's manual performance charts.
- **Item 32–Fuel Amount.** Record the amount of fuel in the aircraft at the start of the fuel consumption check.
- **Item 33–Start Time.** Record the start time the fuel consumption check was initiated.
- **Item 34–Stop Time.** Record the stop time the fuel consumption check was completed.
- **Item 35–Fuel Amount.** Record the amount of fuel remaining at the completion of the fuel consumption check (30 to 60 minutes).
- **Item 36–Burn Rate (fuel consumption).** Use this space to determine and record the in-flight fuel consumption rate (pounds per hour) results.

Note: Fuel quantity and consumption. The crew will periodically monitor the fuel quantity and consumption rate. If fuel quantity/flow indicates a deviation from computed values, the crew will repeat the fuel consumption check to determine if fuel is adequate to complete the mission. The System Status Command Display (SSCD) as well as the fuel control window should also be used as necessary during the mission to obtain fuel consumption information.

- **Item 37–Landing Temperature.** Record the forecast free air temperature at the destination point for the estimated time of arrival.
- **Item 38–Landing Density Altitude (DA).** Record the forecast density altitude at the destination point for the estimated time of arrival. Note: If only available data is the free air temperature and pressure altitude (PA) then calculate and record the predicted density altitude results IAW the operator's manual performance charts.
- **Item 39–Landing Gross Weight (WT).** Record the estimated landing gross weight.
- **Item 40–Descent Rate.** Record the predicted rate of descent to a desired altitude based on the calculation results IAW the operator's manual performance charts.
- **Item 41–Descent Distance.** Record the predicted descent distance to a desired altitude based on the calculation results IAW the operator's manual performance charts.
- **Item 42–Descent Time**. Record the predicted descent time to reach a desired altitude based on the calculation results IAW the operator's manual performance charts.
- **Item 43–Projected Fuel Used.** Record the projected fuel used to reach a desired altitude based on the calculation results IAW the operator's manual performance charts.
- **Item 44–Engine Out Glide Range**. Record the predicted engine out glide range based on the calculation results IAW the operator's manual performance charts.
- **Item 45–Engine Out Best Range.** Airspeed. Record the predicted engine out glide best range airspeed (KIAS) based on the calculation results IAW the operator's manual performance charts.
- **Item 46–Approach Airspeed With ATLS**. Record the predicted approach airspeed with ATLS based on the calculation results IAW the operator's manual performance charts.

- **Item 47–Approach Stall Airspeed With ATLS.** Record the predicted approach stall airspeed with ATLS based on the calculation results IAW the operator's manual performance charts.
- **Item 48–Landing Ground Roll With ATLS.** Record the predicted length of runway required for ATLS landing ground roll distance based on the calculation results IAW the operator's manual performance charts.
- **Item 49–Landing Ground Roll Correction for Slope.** Record the predicted landing ground roll corrections for slopes that slope downward (negative slope), and runways that slope upward (positive slope) based on the calculation results IAW the operator's manual performance charts.
- **Item 50–Landing Ground Roll Correction for Runway Condition Rating (RCR).** Record the predicted landing ground roll for the runway condition rating based on the calculation results IAW the operator's manual performance charts.
- **Item 51–Landing Distance Greater Than (>) 50-Foot (FT) Obstacle With ATLS.** Record the predicted landing distance needed to clear a 50-foot obstacle when taking off from a level runway based on the calculation results IAW the operator's manual performance charts.
- **Item 52–Notes**. Area for additional information as needed.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted academically.
2. Evaluation will be conducted academically.

Note: During evaluations, at the discretion of the evaluator, the PPC will be computed in its entirety, utilizing the aircraft DTM 1-1550-696-10 operator's manual.

REFERENCES: Appropriate common references, AR 95-23, FM 3-04.203, interim statement airworthiness qualification (ISAQ)/air worthiness release, DTM 1-1550-696-10, and local SOPs and regulations.

TASK 1022

Perform Exterior Inspection Procedures

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1. Without error, perform before exterior and exterior inspections according to DTM 1-1550-696-10 or checklist DTM 1-1550-696-CL.

2. Correctly enter and verify the appropriate information on DA Form 2408-12 (Army Aviator's Flight Record), DA Form 2408-13 (Aircraft Status Information Record), DA Form 2408-13-1 (Aircraft Maintenance and Inspection Record), and DA Form 2408-18 (Equipment Inspection List).

3. Verify the data on the DD Form 365-4 (Weight and Balance Clearance Form F–Transport/Tactical).

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The AC will ensure that proper exterior inspections are accomplished using the DTM 1-1550-696-10 or checklist (CL). The AC will ensure the appropriate information is entered on DA Form 2408-12, DA Form 2408-13, DA Form 2408-13-1, DA Form 2408-18, and DD Form 365-4.

2. Procedures. The crewmember(s) will complete all exterior inspections in accordance with the aircraft DTM 1-1550-696-10 operator's manual/CL, and ensure the final airworthiness of the aircraft.

> *Note.* Oil leaks and other defects are difficult to see using a flashlight with a colored lens.

ENVIRONMENTAL CONSIDERATIONS:

1. Cold weather operations**:** Brakes and tire-to-ground contact should be checked for freeze lockup. In addition to the normal exterior inspection, special attention should be given to all vents, openings, control surfaces, hinge points and wing, tail, and fuselage surfaces for accumulation of ice or snow. Ice, snow, and frost accumulation must be removed before takeoff. The wing contour may be sufficiently altered by the ice and snow to cause its lift qualities to be seriously impaired (resulting in the loss of lift) and cause adverse stall characteristics. Propeller blades and hubs will be inspected for ice and snow. Unless engine inlet covers have been installed during snow and freezing rain, the propellers should be turned by hand in the direction of normal rotation to verify they are free to rotate prior to starting the engines. Remove snow, frost, and ice accumulations, in accordance with the aircraft DTM 1-1550-696-10 operator's manual.

2. Desert and hot weather operations: Check that the landing gear struts are free of sand and grit and the aircraft interior is free of an accumulation of sand and dust. Ensure all rotating components, moveable flight controls, and inlets/exhausts are clear of sand and/or dust.

NIGHT CONSIDERATIONS: If time permits, accomplish the exterior inspection during daylight hours. During the hours of darkness, use a flashlight with an unfettered lens to supplement available lighting.

> *Note.* Crew performing exterior inspection should be aware of recent maintenance performed and look at those areas in greater detail.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted in the UAS (for exterior inspection) and academically (for forms and records review).

2. Evaluation will be conducted in the UAS for exterior inspection, and forms and records review.

REFERENCES: Appropriate common references, AR 95-23, DA Pam 738-751, DTM 1-1550-696-10, TM 1-1550-696-CL, TM 55-1500-342-23, and unit SOP.

TASK 1024

Perform Engine Start/System Checks

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1. Perform procedures and checks in accordance with DTM 1-1550-696-10 or DTM 1-1550-696-CL.

2. Ensure that the checks from generator power up through engine run-up checks are completed and systems are operating within prescribed tolerances.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. All air/ground crewmembers will complete the required checks and procedures pertaining to their crew duties in accordance with DTM 1-1550-696-10 and/or checklist DTM 1-1550-696-CL and per crew briefing.

2. Procedures. Ground crewmembers will position the aircraft properly for run-up. The air/ground crewmembers will complete all required steps according to their areas of responsibilities beginning at generator power up through engine run-up checks. The crew will ensure the engine, related systems, and equipment is operating within specified limits. The flight crew will read the checklist and ensure that all of the checklist items are completed in proper order in accordance with DTM 1-1550-696-10 and/or checklist DTM 1-1550-696-CL. Crewmembers will use the checklist to complete checks and procedures appropriate to their crew station.

3. All crewmembers will use the standard challenge and response communications.

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+-----------------------------------------------------------+
|                                                           |
|                         WARNING                           |
|                                                           |
|     Exercise extreme caution during limited visibility    |
|     and night operations.                                 |
|                                                           |
+-----------------------------------------------------------+
```

ENVIRONMENTAL CONSIDERATIONS:

1. Cold weather operations: Before starting engine. Check all controls for full travel and freedom of movement.

Starting engine: When starting engine on ramps covered with ice, the propellers should remain feathered to prevent the tires from sliding.

2. Desert and hot weather operations: Use normal starting procedures. Be aware that higher-than-normal engine temperatures may be expected, and be prepared to abort the start before temperature limitations are exceeded.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted in the MQ–1C UAS, at an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, AR 95-23, FM 3-04.203, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1032

Perform Radio Communication Procedures

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, and established radio communication.

STANDARDS:

1. Check, set and operate UAS radios as required.

2. Establish and maintain radio contact with the desired individual, unit and/or air traffic control (ATC) facility.

3. Operate all internal/external communication systems and mission equipment (to include identification friend or foe [IFF], Blue Force Tracker [BFT], Link-16, and so forth).

4. Perform two-way radio failure procedures per local procedures, flight information handbook (FIH), International Civil Aviation Organization (ICAO) rules, and/or host country regulations.

5. Without error, adjust system radios to the proper frequencies (both secured and unsecured) based on mission requirements.

6. When communicating with ATC facilities, use the correct radio communication procedures and phraseology according to Federal Aviation Regulations (FAR), Aeronautical Information Manual (AIM), and Department of Defense (DOD) flight information publication (FLIP).

7. Acknowledge each radio communication by using the correct aircraft call sign.

8. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions:

   a. The aircraft commander (AC) will assign radio frequencies and NETs per mission requirements during the crew briefing and will indicate which crewmember will establish and maintain primary communications. However, if crewmembers monitor two frequencies simultaneously, they will keep each other informed of any actions or communications conducted on their respective frequency.

   b. Crewmembers should monitor avionics, perform frequency changes, and establish initial contact. Crewmembers will copy pertinent information and repeat information as requested by the AC. In case of two-way radio failure, the crewmember at the payload station will troubleshoot the appropriate equipment and announce results.

2. Procedures:

   a. The crew will use radio communications procedures, phraseology and terms as appropriate for the area of operations. Use correct call sign, signal operating instruction, or tail number appropriate to the situation when acknowledging each communication transmissions.

   b. The assigned crewmember will access the appropriate communication page and check/set NETs, radios, radio modes (secured and unsecured), transponder as required and maintain a continuous listening watch on the assigned frequencies. When required, the assigned crewmember will establish communications with the appropriate ATC facility/tactical unit. The assigned crewmember will monitor the frequency before transmitting and use the correct radio call sign when acknowledging each communication. The assigned crewmember will transmit pilot reports, position reports, and flight plan changes (as required).

   c. When advised to change frequencies, the assigned crewmember will acknowledge the transmission before making the change. The assigned crewmember will select the new frequency as soon as possible unless instructed to do so at a specific time, fix, or altitude.

   d. Using the checklist the assigned crewmember will turn-on, self-test, and conduct operational checks of all other internal and external tracking and communication systems to include BFT, Link-16,

ABCS, and so forth. The crew will employ the equipment as directed by unit standing operating procedure (SOP) or as briefed.

e.   In case of two way radio failure, the assigned crewmember will attempt to reestablish communications by using alternate frequencies and radios. If unsuccessful, execute lost communication procedures IAW appropriate local reference or FIH.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, Aeronautical Information Manual (AIM), AN/PRC-117 (V) (C), Department of Transportation/Federal Aviation Administration (DOT/FAA) 7110.65, Flight Information Handbook (FIH), FM 6-02.53, ATP 6-02.72, DTM 1-1550-696-10, DTM 1-1550-696-CL, TM 11-5820-890-10-1, TM 11-5820-890-10-8, and unit SOP.

TASK 1034

Perform Unmanned Aircraft Taxi

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1. Correctly perform pre-taxi checks and procedures according to the checklist prior to taxi aircraft.
2. Comply with taxi clearances.
3. Follow taxi lines IAW standards set IAW DTM 1-1550-696-10.
4. Properly use power to maintain a safe taxi speed not to exceed limits set IAW DTM 1-1550-696-10.
5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. Crewmembers will complete the required pre-taxi checks and procedures pertaining to their crew duties according to the checklist and per the crew briefing.

2. Procedures:

   a.   Prior to aircraft taxi the aircrew will complete all pre-taxi checks and procedures in accordance with DTM 1-1550-696-CL. When required to initiate taxi, move joystick forward until the aircraft starts to move. Maintain a safe taxi speed compatible with airfield and environmental conditions. Complete the required taxi checks, and verify the checks with the checklist. While taxiing the aircraft, follow taxi areas. Use taxi guides when operating in closely restricted areas. If changing camera providing taxi video, stop aircraft completely before change is made.

   b.   The crewmember should complete all designated crewmember checks and assist the other crewmembers, as required. The crewmember at the payload station will assist the aircraft operator performing taxi operations with clearing the aircraft using EO/IR sensor (as required).

ENVIRONMENTAL CONSIDERATIONS: During times of limited visibility, reduced taxi speeds should be considered to allow a greater margin of safety. Extra care should be used whenever taxiing in areas where obstacles are difficult to see.

1. Cold weather operations: Use an outside observer to confirm that the wheels are turning and not sliding. When possible, avoid taxiing in deep snow, lightweight dry snow, or slush. Under these conditions, more power is required, steering is more difficult, and snow and slush will be forced into the brake assemblies. Chocks or sandbags may be used to prevent the aircraft from rolling. Because spotty ice cover is difficult to see, taxi speeds should be slow and more clearance should be allowed in maneuvering the aircraft.

2. Desert and hot weather operations: During ground operations, oil temperatures must be monitored. Use normal procedures for warm-up and ground operations. When practical, avoid taxiing over sandy terrain to minimize propeller erosion and engine deterioration. Use minimum braking to prevent brake overheating, especially when operating with higher engine revolutions per minute.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, AR 95-23, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1035

Perform Automatic Take-off and Landing System Takeoff

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1.   Configure aircraft for takeoff. Make sure aircraft is taxied within runway centerline and runway heading IAW DTM 1-1550-696-10 and/or DTM 1-1550-696-CL.

2.   Without error, perform takeoff checks and procedures IAW DTM 1-1550-696-10 and/or checklist DTM 1-1550-696-CL.

3.   Without error complete the automatic take-off and landing system (ATLS) Mode take-off procedures in accordance with DTM 1-1550-696-10 and/or checklist DTM 1-1550-696-CL.

4.   Without error complete the post take-off checks and procedures in accordance with DTM 1-1550-696-10 and/or checklist DTM 1-1550-696-CL.

5.   Correctly perform crew coordination actions.

DESCRIPTION:

1.   Crew actions:

a.   The aircraft operator (AO) will select the appropriate runway based on weather and current traffic conditions. The AO will remain focused on clearing the aircraft and obstacle avoidance using the nose camera and will monitor system indications for abort parameters.

b.   The crewmember at the payload station will remain focused primarily on clearing the aircraft and provide adequate warning of obstacles by using available sensors. The crewmember at the payload station will perform crew coordination actions to assist the AO in the completion of the takeoff, and post take-off checks and procedures.

2.   Procedures:

a.   The AO will position the aircraft at a point that provides enough runway to allow the aircraft to achieve take-off speed before reaching the minimum stopping distance. Prior to ATLS takeoff, the aircrew will complete all take-off checks and procedures in accordance with DTM 1-1550-696-CL. The crewmember at the payload station will ensure payload is caged.

Note. ATLS will allow the aircraft to enter take-off mode at a point on the runway that may not allow sufficient distance to achieve take-off speed.

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b.   While aircraft is in park mode select takeoff. Monitor take-off checks as the ATLS performs an automatic check of the aircraft to ensure critical status items and all navigation sensors are functioning. Once take-off roll is initiated, make sure the aircraft lowers flaps, take-off power is applied and brakes are released. The AO will coordinate with the crewmember at the payload station and crew chief to safely execute checklist procedures to achieve ATLS mode takeoff.

c.   All crewmembers will use standard "challenge and response" communication during completion of take-off checks, and post take-off checks.

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CAUTION

The aircraft operator can choose to override abort conditions by selecting the abort override button. However, the probability of an incident is greatly increased. It is recommended that override only be selected when critically necessary.

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    d.   If aircraft exceeds any of the parameters listed in DTM 1-1550-696-10, perform a manual abort.

Note. If the system performs an automatic abort during takeoff, the cause for the abort will be displayed in the Warnings, Cautions, and Advisories (WCA) display to prompt the aircraft operator to correct the problem or override the abort.

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    e.   Perform post-takeoff procedures IAW DTM 1-1550-696-10/DTM 1-1550-696-CL.

ENVIRONMENTAL CONSIDERATIONS:

1.   Cold weather operations: If there is a possibility of ice, snow, or frost accumulation on the flying surfaces, **do not** attempt a takeoff. Activate all anti-ice and deice systems allowing sufficient time for the equipment to become effective. Accumulations of snow, slush, or water will increase takeoff distances. After a takeoff from a runway covered with snow, slush, or water, delay gear retraction and cycle the landing gear to dislodge ice accumulation. When aircraft icing is likely, climb at a higher than normal airspeed. Stall speeds may be higher than normal.

2.   Desert and hot weather operations: Avoid taking off in the wake of another aircraft if the runway is sandy or dusty.

3.   Mountain operations: Take-off and climb performance will be reduced due to density altitude.

TRAINING AND EVALUATION REQUIREMENTS:

1.   Training may be conducted in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

2.   Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, AR 95-23, FM 3-04.203, FM 3-04.240, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1045

Perform Flight in Knobs Mode

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1. Upon entry into knobs mode ensure aircraft maintains proper altitude and airspeed.

2. Adjust airspeed commands to meet time-on-target (TOT) requirements in accordance with mission requirements, while staying within the operating parameters.

3. Adjust altitude commands to meet mission requirements.

4. Adjust airspeed and heading for winds. Maintain heading to stay in approved airspace boundaries.

5. Ensure aircraft maintains airspeed and altitude within parameters of the aircraft operating limits.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The aircraft operator's (AO's) focus will be on the flight instruments; ensuring that the aircraft is responding as commanded. The AO will also coordinate with the crewmember at the payload station to cross-checks TOT calculations for airspeed.

2. Procedures:

    a.   Determine heading. From the current aircraft location and appropriate map display, determine the correct magnetic heading to the next checkpoint/target with corrections for wind.

    b.   Determine airspeed. From the current aircraft position, determine the distance to the next checkpoint or target. Calculate the proper airspeed to reach the checkpoint/target within the specified time maintaining operational parameters. Initiate a new airspeed command on the air vehicle control panel. Monitor pitch indication for proper airspeed and altitude response.

    c.   Determine altitude. From the current aircraft position, determine the altitude of the next waypoint. Initiate a climb or descent on the air vehicle control panel. Monitor engine instruments as well as altitude, airspeed and rate of climb indicators for proper response.

    d.   Course corrections. Monitor ground course and adjust flight parameters as necessary to accomplish mission.

ENVIRONMENTAL CONSIDERATIONS:

1. Cold weather operations: Check aircraft surfaces with payload for icing conditions. Mountain wave turbulence can occur in dry air and with no visible clouds. A mountain wave downdraft may exceed the climb capability of your airplane.

2. Mountain wave operations: Avoid flight at low altitudes over mountainous terrain. Mountain waves occur when air is being blown over a mountain range or even the ridge of a sharp bluff area. As the air hits the upward side of the range, it starts to climb, thus creating what is generally a smooth updraft that turns into a turbulent downdraft. A downdraft may exceed the climb capability of the aircraft.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, AR 95-23, FM 3-04.203, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1046

Perform Dead Reckoning Navigation

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, appropriate maps, and last known UAS range and azimuth.

STANDARDS:
1. Maintain orientation within ±2,000 meters.
2. Arrive over recovery point at the estimated time of arrival.
3. Correctly perform crew coordination actions.

DESCRIPTION:
1. Crew actions. The aircraft operator's (AO's) main focus will be on the heading of the aircraft and azimuth of the ground data terminal. The AO will monitor flight and system instruments.
2. Procedures:

   a.   After obtaining current weather forecasts, plan the flight by marking the route. The other crewmembers should assist with all planning and computations, if they are available. Compute the time, distance, and heading for each leg of the flight route.

   b.   During the flight, use ground data terminal azimuth and dead reckoning to maintain UAS position. Adjust estimated times of arrival for subsequent legs of the route using the latest in-flight computed data. The optics payload should be used as necessary to maintain the desired course (ground track).

NIGHT CONSIDERATIONS: Periods of darkness or reduced visibility require more detailed flight planning.

TRAINING AND EVALUATION REQUIREMENTS:
1. Training may be conducted academically, in the MQ–1C UAS, at an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, aeronautical charts, FM 3-04.203, FM 3-04.240, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1048

Perform Fuel Management Procedures

CONDITIONS: Given an appropriate scale map with mission route denoted, altitude, weather conditions, take-off weight of aircraft, and airspace available.

STANDARDS:

1. Verify that the required amount of fuel is on board at the time of takeoff.

2. Correctly perform an in-flight fuel consumption check 30 to 60 minutes after level-off or entry into cruise flight.

3. Initiate alternate course of action if actual fuel consumption varies from the planning value, and the flight cannot be completed with the required reserve.

4. Monitor fuel quantity and consumption rate during the flight.

5. Correctly perform crew coordination procedures.

DESCRIPTION:

1. Crew actions:

    a.   The aircraft operator (AO) will brief fuel management responsibilities before takeoff. The AO will initiate an alternate course of action during the flight, if the actual fuel consumption varies from the planning value and the flight cannot be completed with the required reserve.

    b.   The AO will record initial fuel figures, fuel flow computation, burnout, and reserve times. The AO will announce initiation and completion of the fuel check and the results of the fuel check.

    c.   The crewmember at the payload station will acknowledge the results of the fuel check.

2. Procedures:

    a.   The AO calculates flight time by totaling the distance from the take-off site, to and between all targets, and back to the landing site. Use the performance planning charts found in the aircraft's DTM 1-1550-696-10 operator's manual to determine total mission time.

    b.   The AO calculates maximum amount of flight time by obtaining the number of pounds of fuel expended per hour with considerations to weather and winds. The AO must take into account fuel necessary for takeoff and landing.

    c.   The AO calculates mission fuel by using performance planning charts found in the aircraft's DTM 1-1550-696-10 operator's manual for the aircraft configuration.

    d.   Recalculate fuel consumption every 60 minutes, when aircraft configuration changes and mission parameters change.

ENVIRONMENTAL CONSIDERATIONS: Altitude, temperature, weight, and airspeed will cause changes in the aircraft's fuel burn rate.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, at the MQ–1C UAS, at an accredited MQ–1C UAS simulator, or using the UAS embedded training software.

2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, AR 95-23, DTM 1-1550-696-10, DTM 1-1550-696-CL, Unit SOP.

TASK 1050

Perform Flight Utilizing Automatic Flight Modes

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1. Without error, complete portions of the cruise procedures as required in accordance with DTM 1-1550-696-10 operator's manual and/or checklist DTM 1-1550-696-CL.
2. Without error, exercise all automatic flight modes.
3. Without error, verify correct mission is loaded.
4. Without error, engage and verify the aircraft enters the selected flight mode.
5. Without error, verify airspeed, heading, and altitude are correctly set for mission.
6. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The aircraft operator (AO) will announce all flight mode changes. The AO will verify that the aircraft enters the selected flight mode by monitoring the flight mode section on the air vehicle control panel.
2. Procedures:

   a.   Mission Flight Mode: The AO selects and loads a mission to the aircraft as required. Verify waypoints, airspeed and altitude are appropriate for the mission and **do not** exceed system limitations. The AO will select mission flight mode on the air vehicle control panel. The AO can override the airspeed and altitude and control each parameter via the airspeed and altitude sliders as required, until the aircraft enters fully automated flight. Verify that the aircraft achieves designated waypoints and executes flight plan parameters within programmed limitations.

   b.   Points NAV Flight Mode: The AO will select "Points NAV" on the air vehicle control panel. Airspeed and altitude remains under Points NAV flight mode while control and sliders can be adjusted, as required, and verified. Command "Points NAV" destination by selecting location on the (air vehicle control station) map display, or by data entry in the Points NAV dialog box in the air vehicle control panel. Verify that the aircraft achieves designated point and executes orbit parameters within programmed limitations.

   c.   Camera Guide Flight Mode: The AO will coordinate with the crewmember at the payload station before entering camera guide. The AO will load the camera guide parameters to the unmanned aircraft (UA) and select camera guide on the air vehicle control panel. Airspeed and altitude remains under camera guide control and sliders can be adjusted, as required, and verified. Verify the aircraft enters the correct orbit around the camera stare point. Ensure to enter another flight mode before going to pilots window.

ENVIRONMENTAL CONSIDERATIONS:

1. Cold weather operations: Check aircraft surfaces with payload for icing conditions.
2. Mountain wave operations: Avoid flight at low altitudes over mountainous terrain. Mountain waves occur when air is being blown over a mountain range or even the ridge of a sharp bluff area. As the air hits the upward side of the range, it starts to climb, thus creating what is generally a smooth updraft that turns into a turbulent downdraft. A downdraft may exceed the climb capability of the aircraft.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, AR 95-23, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1071

React to System Emergency

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, and the indications of an emergency condition, specific malfunction, or a warning, caution, or advisory given by instructor operator/standardization instructor operator.

STANDARDS:

1. Recognize, announce, and analyze indications of an emergency. Perform or describe all underlined steps without reference to the CL. Perform or describe all other action steps in accordance with DTM 1-1550-696-10 and/or checklist DTM 1-1550-696-CL.

2. Complete appropriate emergency procedures.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. When either crewmember detects an emergency situation, one will immediately alert the other crewmember as follows:

    a.   The aircraft operator (AO) will perform the underlined steps in DTM 1-1550-696-10 and/or DTM 1-1550-696-CL, and will initiate the appropriate type of landing, as required for the emergency.

    b.   The AO/crewmember at the payload station not executing the emergency procedure will perform as directed or briefed and if time permits, will verify all emergency checks with DTM 1-1550-696-10 and/or DTM 1-1550-696-CL.

    c.   The AO/crewmember at the payload station will request appropriate emergency assistance as described in the flight information handbook (FIH).

2. Procedures. At the first indication of a warning/caution/advisory message, abnormal aircraft behaviors, and/or odor, make an announcement. Identify the malfunction and perform the appropriate emergency procedure.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

2. Evaluation will be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

REFERENCES: Appropriate common references, AR 95-23, DA Pam 738-751, FIH, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1081

Perform Automatic Take-off and Landing System Abort

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, suitable runway, and clearance by air traffic control (ATC), (if required).

STANDARDS:

1. Without error, complete the takeoff or before landing check as appropriate according to DTM 1-1550-696-10 or DTM 1-1550-696-CL.

2. Monitor safe flight to determine when operator should initiate an abort on takeoff or landing.

3. Announce abort.

4. Without error perform aircraft take-off/landing checklist.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew Actions. Given that the aircraft has self aborted the ATLS takeoff/landing or the aircraft operator has selected ABORT on the Joystick console or the abort button on the VSM menu, the aircraft operator will announce, "ATLS abort," and notify ATC. The crewmember at the payload station will assist aircraft operator as required.

2. Procedures.

During takeoff or landing, should any member of the aircrew, to include; ATC, Observers, ground crewmembers etc., that notices a safety of flight issue will announce abort, at which time the AO (a) will initiate the ATLS abort immediately.

   a.   Takeoff abort:

   (1)   Prior to rotation the aircraft operator will monitor and verify that the aircraft has gone to idle and is breaking to a stop. If stopping distance is critical aircraft operator will kill engine.

   (2)   After rotation the aircraft operator will verify that the aircraft is climbing and heading to the Go-Around point (waypoint 9).

   (3)   The aircraft operator will either take control of the aircraft in knobs mode when available, or allow the system to continue is predetermined ATLS profile.

CAUTION

The aircraft operator can choose to override abort conditions by selecting the abort override button. However, the probability of an incident is greatly increased. It is recommended that override only be selected when critically necessary.

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   b.   Landing abort:

   (1)   Prior to touchdown, whether a system or operator initiated ATLS abort, the aircraft operator will verify that the aircraft is climbing and heading to the Go-Around point (waypoint 9).

   (2)   The aircraft operator will either take control of the aircraft in knobs mode when available, or allow the system to continue is predetermined ATLS profile.

CAUTION

Overriding a landing abort will cause the aircraft to continue an approach outside of automatic takeoff and landing system design specifications and may result in damage to the system. Override should only be used in unusual situations where landing the aircraft immediately is necessary to prevent loss of aircraft.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, AR 95-23, DA Pam 738-751, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

Task 1086

Perform Automatic Take-off and Landing System Landing

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, suitable runway, and clearance by air traffic control (ATC) (if required).

STANDARDS:

1. Without error, verify correct automatic take-off and landing system (ATLS) runway is selected and loaded.

2. Without error, complete the before landing and landing check according to DTM 1-1550-696-10 or DTM 1-1550-696-CL.

3. If any landing parameters are exceeded perform a manual abort.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions:

    a.   The aircraft operator (AO) will select the appropriate runway based on weather and current traffic conditions. The AO will remain focused on clearing the aircraft and obstacle avoidance using the nose camera and will monitor system indications for abort parameters.

    b.   The crewmember at the payload station will remain focused primarily on clearing the aircraft and will provide adequate warning of obstacles by using available sensors. The crewmember at the payload station will perform crew coordination actions to assist the AO in the completion of the descent and landing checks.

2. Procedures:

    a.   The AO will select and load the appropriate runway and entry point based upon weather and ATC clearance. Prior to landing, all before landing and landing checks will be completed in accordance with DTM 1-1550-696-CL. After commanding land, the AO will ensure aircraft descends to the proper altitude, airspeed and aircraft is flying to selected waypoint.

    b.   The AO will verify and announce "landing gear is down" before reaching the initial approach fix (IAF). The crewmember at the payload station should visually verify gear is down.

    c.   All crewmembers will use standard "challenge and response" communication.

CAUTION

Overriding a landing abort will cause the aircraft to continue an approach outside of automatic takeoff and landing system design specifications and may result in damage to the system. Override should only be used in unusual situations where landing the aircraft immediately is necessary to prevent loss of aircraft.

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    d.   If aircraft exceeds any landing parameters, perform a manual abort.

    e.   Descent and landing procedures completed IAW DTM 1-1550-696-10/DTM 1-1550- 696-CL.

ENVIRONMENTAL CONSIDERATIONS: Cold weather operations: landings on icy runways should be made only when necessary. Braking and steering are less effective under slick runway conditions, and hydroplaning may occur at high speeds on wet runways.

TRAINING AND EVALUATION REQUIREMENTS:

1.   Training may be conducted in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

2.   Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, AR 95-23, FM 3-04.203, FM 3-04.240, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1111

Track a Target

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, payload operational checks completed, and conditions that provide target(s) to track.

STANDARDS:

1. Position the aircraft to maintain payload to target line of sight.
2. Position the payload to maintain payload line of sight (LOS) reticle centered on the target
3. Select the appropriate sensor IAW mission requirements.
4. Illuminate/designate/range find target as required for mission.
5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. For tracking a target (moving or static), the aircraft operator main focus will be on the flight instruments to ensure the aircraft is responding appropriately to airspeed, altitude and heading inputs to achieve proper aircraft position. The crewmember at the payload station main focus will be to coordinate with the aircraft operator (AO) to arrive over the target within the time constraints and maintain the proper loiter, in order to maintain proper payload position to identify and maintain the payload optical LOS reticle on the target. If required to Illuminate, designate, laser range find target, the crewmember at the payload station will observe the principles of safe LASER operation. The AO will continue to monitor the flight instruments as well as keeping the laser line of sight free of obstacles.

2. Procedures:

   a. The AO will maneuver the aircraft to assist in tracking the target (moving or static).

   b. The crewmember at the payload station will maintain the payload optical LOS reticle on the target using the proper line of sight, and proper tracking mode, while obtaining the best optics resolution.

   c. The crewmember at the payload station will observe and record any pertinent information and accurately report such information in a timely manner to the appropriate unit in the proper format.

   d. If there is a requirement to provide a LASER spot or designation for target acquisition by other sources, ensure the crewmember at the payload station observes the principles of LASER operations. The crewmember at the payload station will provide accurate target illumination/ designation. The crew will continue to monitor the flight instruments as well as keeping the LASER spot/designator free of obstacles.

ENVIRONMENTAL CONSIDERATIONS: A thorough crew briefing should be conducted prior to operations. Crew coordination is crucial.

NIGHT CONSIDERATIONS: When using infrared, the crew can see through thin obscurations, such as light fog or drizzle, with little degradation.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, FM 3-04.126, FM 3-04.155, TC 3-04.45, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1116

Conduct Reconnaissance Operations

CONDITIONS: Given MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, appropriate maps, and completed reconnaissance pre-mission/operations plan.

STANDARDS:

1. Conduct thorough pre-mission planning.
2. Conduct a detailed map reconnaissance as required.
3. Employ appropriate form of reconnaissance and visual search techniques.
4. Make specific and timely reports about information obtained during the reconnaissance.
5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew action. While performing reconnaissance operations, the aircraft operator (AO) main focus will be on the flight instruments to ensure the aircraft is responding appropriately to airspeed, altitude and heading inputs to achieve to maintain aircraft orientation and perform reconnaissance of the assigned sector. The crewmember at the payload station will verify the boundaries based on the type of reconnaissance and maneuver required to perform the search and will coordinate this information with the AO. The crewmember at the payload station will coordinate with the AO to maintain proper aircraft position, in order to maintain proper payload position to maintain unobstructed line of sight while conducting reconnaissance.

2. Procedures. Before conducting reconnaissance operations, crewmembers must know certain information about the type of reconnaissance being performed and the techniques used during the mission. After receiving the mission assignment, the crew should conduct a detailed map reconnaissance and analyze the known enemy situation according to the factors of mission, enemy, terrain and weather, troops and support available, time available, and civil considerations (METT-TC). Before departing on the mission, the crew should confirm the radio frequencies and call signs of other teams as well as the available fire support assets. The mission coordinator (MC) coordinates to ensure specific tasks for support of the commander's intent are integrated into the reconnaissance plan. The reconnaissance operation will be focused on a collection effort performed before, during, and after other combat operations to provide combat information and intelligence, which are then used by the commander and staff to develop, confirm, or modify the commander's plan. While conducting reconnaissance operation, the crewmember at the payload station will apply proper visual search techniques, select the appropriate sensor, and proper field of view. During reconnaissance operations, the crew will be responsible for obtaining, collecting, and reporting information.

    a.   Aerial Observation.

        (1) During missions involving direct observation, the crew is primarily concerned with detection, identification, location, and reporting. Tactical and non-tactical environments use aerial observation.

           (a) Detection. Detection requires determining that an object or an activity exists.

           (b) Identification. Major factors in identifying a target are size, shape, and type of armament.

           (c) Location. The exact location of targets is the objective of the mission. Depending on the nature of the targets, the crew may be able to locate the center of mass, the boundaries of the target, or the boundaries of the entire area.

                • Locate target using manual payload control. The crewmember at the payload station will begin to use the payload to locate the general area of the target by identifying terrain and/or cultural features leading into the target area as well as the camera pointing indicators. The crewmember at the payload station will begin to narrow the

field of view (FOV) of the payload and identify the target through the relationship of the identified features in the target area and payload indicators.

- Locate target using point-at-coordinate menu. After coordinating the initial heading and airspeed to the target area with the AO, the crewmember at the payload station will open the "Point-at-Coordinate" menu and key in the coordinates of the target. The crewmember at the payload station will then verify the coordinates are correct, select "Apply", which sends the data to the unmanned aircraft (UA). The crewmember at the payload station will verify the payload turns toward the target area. The AO will then fly towards the crewmember at the payload station's payload position, while monitoring the flight instruments and the depression angle. The crewmember at the payload station will begin to narrow the FOV of the payload to identify the target. The crewmember at the payload station will maintain the crosshairs on the target and coordinate with the AO on depression angle and bearing indicator changes that will require an adjustment to the UA position to maintain the required orbit parameters.

- Locate the target with the aid of points NAV. The crewmember at the payload station will provide the coordinates of the target and determine groundspeed required to meet the TOT requirements. The AO will enter POINTS NAV mode. The AO will then verify the UA is flying to the target coordinates at the appropriate airspeed. As the UA flies over the target coordinates, the AO will verify it enters POINTS NAV hold mode above the target. The crewmember at the payload station will identify the target by steering the payload to the target location.

(d) Reporting. Spot reports provide commanders with critical information during the conduct of missions. The requesting agency specifies the method of spot reporting. Reports of no enemy sightings are frequently just as important as actual enemy sightings.

(2) Visual search is the systematic visual coverage of a given area that observes all parts of the area. The purpose of visual search is to detect objects or activities on the ground. The crew's ability to search a given area effectively depends on several factors: in addition to the limitations of the human eye itself, the most important of these factors are altitude, airspeed, terrain and meteorological conditions, and visual cues.

(a) Altitude. Higher altitudes offer greater visibility with less detail. Use higher altitudes for survivability considerations.

(b) Airspeed. The altitude, the terrain, the threat, and meteorological conditions determine selection of the airspeed (cruise/loiter/dash).

(c) Terrain and Meteorological Conditions. Recognizable size and details of the area largely depend on the type of terrain such as dense jungle or barren wasteland. The prevailing terrain and meteorological conditions often mask objects and allow only a brief exposure period.

(d) Visual Cues. In areas where natural cover and concealment make detection difficult, visual cues may indicate enemy activity. Some of these cues are as follows:

- Color. Foliage used to camouflage will differ from the color of natural foliage.
- Texture. Smooth surfaces, such as glass windows or canopies, will shine when reflecting light. Rough surfaces will not.
- Shapes and Shadows. Synthetic objects cast distinctive shadows characterized by regular shapes and contours as opposed to random patterns that occur naturally.
- Trails. Observe trails for cues as to the type/quantity of traffic, and how recently it passed.
- Smoke and Dust. Observe smoke for color and volume. Dust from moving vehicles is visible at great distances.
- Movement and Light. The most easily detectable sign of enemy activity is movement and, at night, infrared (IR) light. Movement may include disturbance of foliage, snow, soil, or birds. Laser-aiming devices are easily recognizable.

● Obvious Sightings. The enemy is skillful in the art of camouflage. The crew must be aware that obvious sightings may be intentional because of high concentrations of anti-aircraft weapons.

b.　Zone Reconnaissance.

(1) Zone reconnaissance is the directed effort to obtain detailed information concerning enemy, terrain, society, and infrastructure IAW the commander's intent. It is conducted within a location delineated by boundaries. A zone reconnaissance is executed when the enemy situation is vague or when information concerning cross-country traffic-ability is desired. It is suitable when knowledge of the terrain is limited or when combat operations have altered the terrain. Zone reconnaissance may be threat-, terrain-, society, or infrastructure-oriented, or a combination of two or more of these factors. Additionally, the commander may focus the reconnaissance effort on a specific enemy force. A terrain-focused zone reconnaissance includes the identification of natural and man-made obstacles. It takes more time to execute than any other reconnaissance mission, because the area of operation and the breadth of information to be gathered are larger. Adequate time to plan and execute the mission must be provided. The aircrew must reconnoiter the zone in a systematic manner using either manual or automatic search techniques.

(a) After receiving the mission assignment, the crew should conduct a detailed map reconnaissance and analyze the known enemy situation IAW the factors of mission, enemy, terrain and weather, troops and support available, time available, and civilian considerations (METT-TC), and select altitudes and waypoints that will best accomplish the mission.

(b) The crew must check—

● Fording sites.

● Trails for recent use.

● Densely wooded areas for stay-behind or ambush units.

● Bridges for condition, location, demolition, and classification.

● Hilltops and dominant manmade features for observation posts.

(c) The aircraft operator flies the mission on the predetermined route or another route if required by the situation. The crewmember at the payload station uses the sensors to identify terrain and detect possible enemy activity. The AO maintains navigation within specified boundaries unless authorized to cross them.

(d) The crew must report the evidence or absence of enemy activity. They must also provide specific reports about route conditions and any other information requested. Reports must be timely and specific.

c.　Area Reconnaissance.

(1) Area reconnaissance is the directed effort to obtain detailed information concerning enemy, terrain, society, and infrastructure of a specific area IAW the commander's intent. The objective in an area reconnaissance, however, is relatively smaller than that for a zone reconnaissance. As a result, area reconnaissance proceeds faster than zone. Reconnaissance objectives may be a small village or town; facilities such as water treatment plants, weapon storage sites, or political headquarters; or other sites of tactical importance, such as a suspected assembly area, a cache site, or an airport. The aircrew must reconnoiter the area in a systematic manner using either automatic or manual search techniques.

(a) After receiving the mission assignment, the crew should conduct a detailed map reconnaissance and analyze the known enemy situation IAW the factors of METT-TC, and select altitudes and waypoints that will best accomplish the mission.

(b) Search techniques.

(2) Auto Search. Auto search provides the crewmember at the payload station with the ability to methodically control an area search without having to manually control the payload. The

search types available to the crewmember at the payload station are point and pattern (line and area). Searches are created using the mission planner.

- Point search. The crewmember at the payload station sets a maximum radius in Meters to complete the search. Dwell time selectable for "clutter" density, low (5 seconds), medium (14 seconds), high (20 seconds). The crewmember at the payload station is notified if current resolution (pixels/m) is greater than detection resolution. The point search will conduct a spiral search outward from the center location. The search will continue until the search reaches the specified radius of the search.

- Area search. The mission planner is used during preflight or just prior to starting the search to define the search polygon. The crewmember at the payload station sets the start at first point or opposite side. Area search starts on path between first two points entered. Primary search direction is parallel to this side. Alternate search direction is opposite primary search direction. Swath step direction is 90 degrees to these primary/alternate directions. The search area (polygon) is created in the Core UAS Control System (CUCS) mission planner. Steps are calculated in CUCS Auto Search dialog.

- Route search. The mission planner is used during preflight or just prior to starting the search to define. The crewmember at the payload station sets 1 starepoint width, 3 starepoints in width, or 5 starepoints in width. The Route search area can be conducted in a forward or reverse direction from the point of interest. The selection of 3 or 5 starepoints creates a search area that is 3 or 5 starepoints wide. The 5 starepoint option has 2 points on either side of the route. The Reverse Search option retraces the initial search, staring from the last frame, going backwards to the first frame.

- (2) Manual Search. The crewmember at the payload station will scan the entire area using a preplanned pattern to cover the entire area. Coverage parameters in the options menu on the sensor control panel may be selected to view coverage splotches on the scrolling map to facilitate complete and accurate coverage of the area to be searched. The crewmember at the payload station will zoom in and out to observe the area to be searched.

d.   Route Reconnaissance.

(1) Route reconnaissance is the directed effort to obtain information, IAW the commander's intent, along a specified route and the adjacent terrain from which movement could be influenced. The route is a prescribed course from a start point to a specified destination. Route reconnaissance is conducted to analyze route trafficability and determine whether the route is clear of obstacles and/or enemy forces. Route reconnaissance can be performed as either a stand-alone mission or an additional task during zone reconnaissance.

(a) The crewmember at the payload station will verify the start point and the direction of the road/route search. The crewmember at the payload station will optimize the payload to facilitate obtaining satisfactory video of the road/route and the immediate area. When the AO maneuvers the UA into a position with optimal resolution based on mission requirements, the crewmember at the payload station will begin the road/route scan. The crewmember at the payload station will maintain the video crosshairs centered on the road and perform the road/route scan until a target is encountered or the UA is no longer in position to maintain optimal resolution. At this time, the crewmember at the payload station will stop the scan and hold the position on the road until the AO again maneuvers the UA into a position where the resolution is optimal. The crewmember at the payload station will then resume the road/route scan.

(b) The AO and crewmember at the payload station must coordinate to determine which side of the road is best for observation, where obstructions might occur, and what maneuvers to perform in the event that obstructions are encountered. The AO may have to maneuver the UA from one side to the other or fly down the center of the road to avoid obstructions to the road search and maintain optimal resolution based on mission requirements.

NIGHT CONSIDERATIONS: A thorough crew briefing should be conducted prior to night operations; crew coordination is crucial. When maneuvering the aircraft, the AO must consider obstacles and other aircraft. All crewmembers must avoid fixation by using proper scanning techniques.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, FM 3-04.126, FM 3-04.155, FM 3-34.170, TB MED 524, TC 3-04.45, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1122

Perform Target Mark/Store Function

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1. Create new marked target file.
2. Mark target through electronic or manual means.
3. Store target.
4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions:

   a.   The aircraft operator (AO) maneuvers the aircraft to maintain payload to target line of sight on the target to be marked.

   b.   The crewmember at the payload station performs duties as assigned.

2. Procedures. The AO will create a marked target file. Mark the target using either electronic or manual method. Enter any important information or comment about the target, if required. Store target information as appropriate. The crewmember at the payload station performs duties as assigned.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, at the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, FM 3-04.126, FM 3-04.155, MILSTD-2525C, TC 3-04.45, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1123

Configure Communications Relay Package

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:
1. Configure the aircraft radios for radio relay.
2. Identify and tune the appropriate frequency.
3. Establish contact with the message sender.
4. Authenticate, if required.
5. Establish contact with the message receiver.

DES CRIPTION:
1. Crew actions. The aircraft commander (AC) will ensure the required radios are configured and assign crew duties as required.

2. Procedures. Set aircraft radio for retransmit or set appropriate receiver-transmitter to the desired retransmit frequency. Set the radio retransmission selector switch to radios used. Establish communication between each relay radio station. If audio monitoring is desired, adjust audio control for a suitable output. Follow the radio operation procedures in accordance with DTM 1-1550-696-10 or CL to configure each radio for retransmission.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:
1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, FM 3-04.126, FM 3-04.155, Signal operating instructions, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1139

Perform Payload Operational Checks

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1. Without error, perform operational checks on all installed payloads as discovered by the system.
2. Correctly determine the operational status of all payloads.

DESCRIPTION:

1. Crew actions. The crewmember at the payload station will perform operational checks as necessary to determine whether the installed payloads are operating properly. The crewmember at the payload station will determine the effects of any payload discrepancies against the needs of the mission. The crewmember at the payload station will announce the status of the payloads when the checks are completed and record any discrepancies on DA Form 2408-13 (Aircraft Status Information Record).

2. Procedures.

   a. The crewmember at the payload station will perform operational checks as necessary to determine whether the payloads are operating properly. The crewmember at the payload station will announce when the checks are completed.

   b. The crew will determine the effects of a payload malfunction and if the system(s) can be used to perform the assigned mission.

   c. The crew will record any discrepancies on DA Form 2408-13.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1142

Conduct Digital Communications

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1. Ensure proper configuration of ground control station (GCS) tactical local area network as required.

2. Configure the GCS command, control, communications, computers, and intelligence (C4I) software as required.

3. Exchange C4I messages using common message processor and tactical communications.

4. Without error, send closed-captioned video.

5. Correctly perform crew coordination procedures.

DESCRIPTION:

1. Crew actions:

   a. Upon receiving configuration data, the aircraft commander will ensure that all C4I programs are configured correctly, and will assign responsibility for all aspects of digital communications within the crew.

   b. The crewmember at the payload station will have primary responsibility for C4I operations, but the aircraft operator (AO) will be required to properly configure the aircraft operator crew station.

   c. Upon receiving configuration data, the AO and crewmember at the payload station will configure their respective crew stations.

2. Procedures:

   a. The AO and crewmember at the payload station will bring up required C4I programs in accordance with the DTM 1-1550-696-10/CL.

   b. The crewmember at the payload station will use the additional configuration data to input address information as required into the common message processor.

   c. Upon takeoff, the crewmember at the payload station will message the take-off time via C4I as applicable.

   d. Throughout the flight, the aircrew will respond to any messages received and provide target information as applicable via C4I.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, at the MQ–1C UAS, at an accredited MQ–1C UAS simulator, or using the UAS embedded training software.

2. Evaluation will be conducted in the UAS.

REFERENCE: Appropriate common references, DTM 1-1550-696-10, DTM 1-1550-696-CL, Unit SOP.

TASK 1175

Perform Transfer Procedures

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1. Without error, perform procedures and checks per the DTM 1-1550-696-10/DTM 1-1550-696-CL manual.

2. Correctly determine any malfunctions and apply corrective action/troubleshooting procedures.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. Aircraft operator coordinates and conducts transfer with other controlling station.

2 Procedures. For transferring and receiving control of the unmanned aircraft, the aircraft operator (AO) will complete the required steps, checks, or procedures pertaining to their crew duties IAW DTM 1-1550-696-10/DTM 1-1550-696-CL.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1185

React to Inadvertent Instrument Meteorological Condition

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, under simulated inadvertent instrument meteorological conditions (IIMC).

STANDARDS:

1. The crew will conduct weather and aircraft scans periodically.

2. The aircraft operator (AO) will maneuver the unmanned aircraft (UA) out of obscurations. Climb, descend or turn as required.

3. The crew will request air traffic control (ATC) assistance; acknowledge and record the appropriate information.

4. If unable to maintain visual meteorological conditions (VMC), then comply with recovery procedures for less than visual flight rules (VFR) conditions.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The AO, upon IIMC, will proceed as follows:

    a.   Maneuver UA out of IIMC as required.

    b.   Command a climb, if necessary to avoid known obstacles.

    c.   Complete the inadvertent IIMC recovery procedures IAW local regulations and policies.

    d.   Complete less than VFR recovery procedures IAW the system TM and CL. Perform an automatic take-off and landing system (ATLS) landing.

2. The AO at the payload station will—

    a.   Maintain the required communications with ATC, and record ATC information as received.

    b.   Crosscheck the instruments as directed by the AO.

    c.   Conduct weather and aircraft scans periodically with the payload to inform the AO when the aircraft is clear of clouds and obstacles. Conduct aircraft scans are to ensure that the aircraft is not developing ice on the surfaces.

NIGHT CONSIDERATIONS: When using infrared, the crew can see through thin obscurations, such as light fog or drizzle, with little degradation.

> *Note.* Practicing this task at night provides greater benefit since external cues are less visible.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, at the MQ–1C UAS, at an accredited MQ–1C UAS simulator, or using the UAS embedded training software.

2. Evaluation will be conducted in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

REFERENCES: Appropriate common references, AR 95-23, DOD flight information publication (en route) IFR supplement, DOD flight information publication general planning , FM 3-04.240, FM 3-04.203, flight information handbook , local SOPs and regulations, Title 14 CFR/Host Nation regulations, DTM 1-1550-696-10, Unit SOP.

TASK 1254

Perform Instrument Flight Procedures

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, using global positioning system under visual meteorological conditions (VMC), instrument meteorological conditions (IMC), or simulated IMC conditions.

STANDARDS:

      1.   Correctly program waypoints.

      2.   Correctly determine aircraft position.

      3.   Correctly intercept and maintain desired course.

      4.   Correctly identify waypoint passage.

DESCRIPTION:

1. Crew actions:

    a.   The aircraft operator's (AO's) main focus will vary depending on whether the aircraft is operating VMC or IMC. The aircraft crewmember at the payload station will announce all frequency changes, instrument settings, and ATC information that are not monitored by the aircraft operator.

    b.   The aircraft crewmember at the payload station will keep aircraft cleared when operating under VMC using the appropriate payloads, checking the avionics equipment, tuning the required frequencies, and performing actions requested by the AO. The aircraft crewmember at the payload station will verify all frequency changes requested by the AO, and make the required radio transmissions.

2. Procedures. The AO is assisted by the crewmember at the payload station, and will perform the following procedures:

    a.   Equipment check. Check or have the aircraft crewmember at the payload station check navigational equipment to be used during mission. Equipment must be operable and within accuracy tolerance as specified in the DTM 1-1550-696-10, DTM 1-1550-696-CL.

    b.   Station identification. The aircraft crewmember at the payload station will obtain correct grids for desired waypoints.

    c.   Aircraft position. Determine the position of aircraft with respect to a specified waypoint according to procedures in FM 3-04.240, general planning, and/or DTM 1-1550-696-10. Have the aircraft crewmember at the payload station verify position.

    d.   Course interception. After identifying the desired waypoint, determine the location of the aircraft in relation to the desired course. Turn 45 degrees toward the course (90 degrees to expedite), and maintain intercept heading until approaching an on-course indication. Depending on the rate of closure, start a turn to intercept the desired track on course.

    e.   Course tacking. Maintain desired heading until navigation instrument shows an off-course condition; then turn 20 degrees toward the course to re-intercept. If navigation instruments **do not** indicate movement toward the course within a reasonable time, increase the intercept angle. When the course is re-intercepted, turn toward the course and apply the appropriate drift correction (normally one-half of the intercept angle). Continue to bracket the course by decreasing corrections until a heading is obtained that will maintain the aircraft on course.

    f.   Intersection arrival. Determine arrival at waypoint intersections according to procedures in accordance with procedures in FM 3-04.240.

    g.   Waypoint Passage. Identify waypoint passage by observing for proper indications.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

NIGHT CONSIDERATIONS: When using infrared, the crew can see through thin obscurations, such as light fog or drizzle, with little degradation.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

2. Evaluation will be conducted in the MQ–1C UAS, at an accredited MQ–1C UAS simulator, or using the UAS embedded training software.

REFERENCES: Appropriate common references, AR 95-23, DOD flight information publication (en route) IFR Supplement, DOD flight information publication general planning, FM 3-04.240, FM 3-04.203, flight information handbook , local SOPs and regulations, Title 14 CFR/Host nation regulations, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1300

Operate the Optical Sensors Payload(s)

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, with optical sensor payload operational checks and boresight complete.

STANDARDS:

1. Without error, perform optical sensor payload(s) procedures and checks according to DTM 1-1550-696-10/CL.

2. Correctly determine any malfunctions and apply corrective action/troubleshooting procedures.

3. Correctly determine the operational status of the optical sensor payload(s).

4. Correctly perform operational checks of the laser system(s) (as applicable).

5. Employ all optical sensors (for example, day television [DTV], low-light television [LLTV], electro-optical [EO], infrared [IR], and EO/IR fuse mode as applicable).

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions:

   a.   The aircraft crewmember at the payload station will perform operational checks as necessary to determine whether the optical sensor payload(s) is/are operating properly. The aircraft crewmember at the payload station will determine the effects of any optical sensor payload(s) discrepancies against the needs of the mission. The crewmember at the payload station will announce the status of the optical sensor payload(s) when the checks are completed and record any discrepancies on DA Form 2408-13 (Aircraft Status Information Record).

   b.   The crewmember at the payload station will operate the optical sensor(s) in a manner that will take full advantage of the sensor's optimum capabilities (for example, DTV/LLTV/EO/IR/ fuse, field of view [FOV], video view, image auto track, laser spot tracker [LST], or manually as applicable) and marking/designating features (eye-safe laser range finder [ELRF], laser target marker [LTM], and the laser rangefinder designator [LRD]) for a given situation (mission, enemy, terrain and weather, troops and support available, time available, civil considerations in acquiring, tracking, identifying and marking targets.

2. Procedures:

   a.   The crewmember at the payload station will perform operational checks as necessary to determine whether the optical sensor payload(s) is/are operating properly. The crewmember at the payload station will announce when he completes the checks. The crew will determine the effect of an optical sensor payload(s) malfunction and whether the system can be used to perform the assigned mission.

WARNING

LASER light is dangerous and can cause blindness if it enters the eye either directly or reflected from a surface. Personnel will wear approved LASER protection whenever in a controlled area when LASER rangefinder or LASER target designators are being used.

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   b.   Configure and operate the optical sensor payload(s) according to DTM 1-1550-696-10. Select the various sensors and sensor features that offer different imaging capability, such as field of view and magnification. Adjust the sensors as necessary to obtain the best picture. Select the appropriate sensor

and the proper field of view to search for, and acquire targets. Enter the correct laser codes for the mission. Determine and use the different laser types to range, mark, locate, and designate a target.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

NIGHT CONSIDERATIONS: When using infrared (IR), the crew can see through thin obscurations, such as light fog or drizzle, with little degradation.

TRAINING AND EVALUATION REQUIREMENTS:

1.   Training may be conducted in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2.   Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1402

Perform Mission Planning Procedures

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), a mission planning system, mission briefing, access to the latest weather information, notice to airmen (NOTAM), flight planning aides, necessary charts, forms and publications, approved software, aircraft DTM 1-1550-696-10 operator's manual or checklist (CL), and other materials as required.

STANDARDS:

1.   Configure and operate the mission planning system.

2.   Perform tactical flight mission planning by analyzing the mission using the factors of mission, enemy, terrain and weather, troops and support available, time available, civil considerations (METT-TC).

3.   Obtain and analyze weather briefing to determine that weather and environmental conditions are adequate to complete the mission.

4.   Perform map/photo reconnaissance using the available map media or photos. Ensure that all known hazards are plotted on the map or into the approved software.

5.   Select and enter appropriate navigational data to include routes, waypoints, waypoint actions, boundaries, corridors, restrictions, airspace control measures and other information as required.

6.   Determine the proper distance, ground speed, estimate time en route for each leg of the flight and determine the fuel required for the mission

7.   Select and enter appropriate communication data.

8.   Enter appropriate weapons data, laser codes, targets, payload starepoints and other information as required for the mission.

9.   Select appropriate payload and weapons configurations.

10. Load mission data.

11. Ensure mission data printouts are available as required.

12. Perform risk management.

DESCRIPTION:

1.   Crew actions. The mission coordinator (MC) will ensure that all necessary tactical flight information is obtained. Mission data from higher headquarters may be received digitally, in the form of overlays, or on paper. The MC will analyze the mission in terms of METT-TC and will conduct a thorough mission briefing. The aircraft commander (AC) will assign crewmember tasks. One or both crewmembers will plan and enter data into the mission planning system. The AC will brief back results of their planning to the MC.

2.   Procedures:

a.   Analyze the mission applying METT-TC. Conduct a map or aerial photo reconnaissance and obtain a thorough weather briefing that covers the entire mission. Include sunset and sunrise times, density altitudes, winds, and visibility restrictions. If the mission is to be conducted at night, the briefing should also include moonset and moonrise times, ambient light levels, and an electro-optical forecast, if available. Terrain analysis may be accomplished by using the topographic view with either the intervisibility plot or height above terrain feature.

b.   Ensure that any data provided such as waypoints, targets, battlefield graphics list and that route information is considered. Ensure routes, time, distance, and fuel requirements are annotated. Ensure overlays with sufficient information to complete the mission are included. Consider such items as hazards, checkpoints, observation posts, friendly positions and enemy positions.

c.   Input threat data, if available, with appropriate values for radius of detection and radius of kill. When detailed information is required for a checkpoint or target (for example, an update point or a named area of interest [NAI]), ensure the most precise information is entered by grid coordinate.

d.   Determine communications requirements, build and enter radio presets to include graphical user interface initialization information, appropriate frequencies, call signs, expanders, and other appropriate frequencies.

e.   Enter laser codes, payload point at coordinates, notebook data, and appropriate weapons data.

f.   Determine the appropriate sensor for the mission. Review contingency procedures. Ensure that mission data printouts are available as required.

g.   Ensure that the risk management is complete prior to the execution of the mission and the appropriate signatures are obtained.

Note. Many missions will appear similar. Always verify mission load before entering mission mode during flight.

> ### CAUTION
> The data transfer device must be handled with care. Rough handling may cause a complete loss of mission data.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted academically and in the UAS.

REFERENCES: Appropriate common references, AR 95-23, FM 3-04.126, FM 3-04.155, ADP 5-0, ATP 5-19, General Planning, TC 3-04.45, DTM 1-1550-696-10, and unit SOP.

TASK 1405

Transmit a Tactical Report

CONDITIONS: Given a MQ–1C unmanned aircraft system (UAS) and sufficient information to compile a tactical report.

STANDARD: Transmit appropriate report using the proper format.

DESCRIPTION:

1. Crew actions:

   a.   The aircraft operator (AO) is responsible for aircraft and obstacle avoidance. The aircraft commander (AC) will coordinate with the other crewmember as to who will make the report.

   b.   The designated crewmember will prepare the information for the report and coordinate with the AC prior to sending it.

2. Procedures. Reports must be timely and concise. To save time, reduce confusion, and ensure completeness, information should be reported according to an established format. Standard formats for four different types of reports are show in table A-5.

   a.   Spot report. A spot report is used to report intelligence or status regarding events that could have an immediate and significant effect on current and future operations. This is the initial means for reporting troops in contact and event information.

Table A-5. Spot report

LINE 1	Date and time	Date-time group (DTG).
LINE 2	Unit	Unit making report.
LINE 3	Size	Size of detected element.
LINE 4	Activity	Detected element activity at DTG of report.
LINE 5	Location	Universal transverse mercator (UTM) or grid coordinate with military grid reference system (MGRS) grid zone designator of detected element activity or event.
LINE 6	Unit	Detected element unit, organization, or facility.
LINE 7	Time	DTG of observation.
LINE 8	Equipment	Equipment of element observed.
LINE 9	Assessment	Apparent reason or purpose of the activity observed.
LINE 10	Narrative	Free text for additional information required for report clarification.
LINE 11	Authentication	Report authentication.

b.   Battle damage assessment (BDA) report (table A-6) is used to provide a timely and accurate estimate of damage resulting from the application of military force, either lethal or nonlethal, against a predetermined objective.

Table A-6. Battle damage assessment report

LINE 1	Date and time	Date-time group (DTG).
LINE 2	Unit	Unit making report.
LINE 3	Name	Target or installation name.
LINE 4	Country code	Two-letter country code.
LINE 5	Ben	Basic encyclopedia number (BEN): Not applicable (N/A) or UNKNOWN.
LINE 6	Location	Universal transverse mercator (UTM) or six-digit grid coordinate with MGRS grid zone designator.
LINE 7	Tm ref	Target material (TM reference).
LINE 8	Page no.	Page or sheet number (NO).
LINE 9	Collection date and time	Imagery intelligence (IMINT) collection DTG.
LINE 10	Type	Type of IMINT.
LINE 11	Quality	Image quality: GOOD, FAIR, or POOR.
LINE 12	Angle	Viewing angle: VERTICAL or OBLIQUE.
LINE 13	Tot	Time on target (TOT) for attack DTG.
LINE 14	Delivery system	Number and type of delivery system.
LINE 15	Weapons	Number and type of weapons and fusing.
LINE 16	Aim point name	Name of description of target element.
LINE 17	BDA analysis	Narrative of target damage and munitions effects to include: element name, grid reference, physical damage, confidence level, and whether re-attack is required.
LINE 18	Narrative	Free text for additional information required for report clarification.
LINE 19	Authentication	Unit making report.

Note: Repeat lines 3 through 17 to report multiple missions/mission data. Assign sequential lines to succeeding iterations. For example, first iteration is 3 through 17; second iteration is 3a through 17a; third iteration is 3b through 17b; and so on.

c.   Enemy shelling, bombing, or chemical, biological, radiological, and nuclear 1 (CBRN 1) report. This report (table A-7) is used to provide the observer's initial report giving basic data on a chemical, biological, or nuclear attack.

Table A-7. Chemical, biological, radiological, nuclear1 report

LINE 1	Date and time	Date-time group (DTG).
LINE 2	Unit	unit making report
LINE 3	Event	Type of incident: NUCLEAR, BIOLOGICAL, or CHEMICAL.
LINE ALFA	—	CBRN strike serial number.
LINE BRAVO	—	Location of the observer and the direction of the attack.
LINE DELTA	—	DTG of detonation of beginning of attack or detonation and the end of the event.

Table A-7. Chemical, biological, radiological, nuclear1 report, continued

LINE FOXTROT	—	UTM or six-digit grid coordinate with military grid reference system (MGRS) grid zone designator of attack and code used to represent if reported location of attack is actual or estimated.
LINE GOLF	—	Means of delivery and quantity.
LINE HOTEL	—	Type of burst, biological or chemical agent, and persistency.
LINE INDIA	—	Release information on biological or chemical agent attacks.
LINE INDIA ROMEO	—	Release of sampling information on radiological incidents.
LINE JULIET	—	Time in seconds denoting flash-to-bang DTG of nuclear attack.
LINE–LIMA	—	Nuclear burst angular cloud width measured at five minutes after detonation.
LINE MIKE	—	Stabilized cloud measurement at H+10 minutes of nuclear burst cloud.
LINE MIKE ROMEO	—	Description and status of chemical, biological, radiological incidents.
LINE TANGO	—	Terrain, topography, and vegetation description.
LINE YANKEE	—	Downwind direction and wind speed.
LINE ZULU	—	Measured weather conditions.
LINE 4	Time	DTG of observation.
LINE 5	Narrative	Free text for additional information required for report clarification.
LINE 6	Authentication	Report authentication.

d.   Meaconing, intrusion, jamming, and interference (MIJI) report. This report is used to share MIJI incidents in a timely manner and to provide for joint exchange of tactical MIJI information including electro-optic interference.

Table A-8. Meaconing, intrusion, jamming, and interference report

LINE 1	Date and time	Date-time group (DTG).
LINE 2	Unit	Unit making report.
LINE 3	Interference	Strength and characteristics.
LINE 4	Location	UTM or six-digit grid coordinate with MGRS grid zone designator of incident.
LINE 5	On time	Start DTG.
LINE 6	Off time	End DTG.
LINE 7	Effects	Operations or equipment affected.
LINE 8	Frequency	Frequency or frequency range affected.
LINE 9	Narrative	Free text for additional information required for report clarification.
LINE 10	Authentication	Report authentication.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, DTM 1-1550-696-10, FM 3-04.126, FM 3-11, FM 6-99, and unit SOP.

TASK 1416

Perform Weapons Initialization Procedures

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1. Prepare weapon and LASER systems for operation.
2. Determine the status of the weapon and LASER systems.
3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The crew will perform weapon and LASER system initialization procedures on all tactical missions, or as directed by the commander. These procedures determine the status and operation of the weapon and LASER systems. Crewmembers will coordinate manipulation of armament and LASER switches and announce when they have completed weapons and LASER initialization procedures. The crew will determine what effect the weapon and LASER system malfunction will have on the assigned mission.

2. Procedures. Perform weapons and LASER initialization procedures according to DTM 1-1550-696-10 and/or DTM 1-1550-696 CL. Ensure missiles have passed built in test (BIT) and LASER has been correctly bore sighted according to DTM 1-1550-696-10 and/or DTM 1-1550-696 CL. Ensure that the correct weapon and LASER codes are entered into the system.

WARNING

Laser light is dangerous and can cause blindness if it enters the eye either directly or reflected from a surface. Personnel will wear approved laser protection whenever in a controlled area when laser rangefinder or laser target designators are being used.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, DTM 1-1550-696-10, DTM 1-1550-696-CL, TC 3-04.45, TB MED 524, and unit SOP.

TASK 1458

Engage Target With Point Target Weapon System

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL in an approved range or simulated tactical environment.

STANDARDS:

1. Select the appropriate missile delivery mode lock-on after launch (LOAL) high, low, or direct.
2. Select the appropriate designation techniques.
3. Select the proper weapons overlay for the type of delivery mode.
4. Select the correct laser code.
5. Select the appropriate constraints for the mission conditions.
6. Engage targets with Hellfire missile based on the operational parameters of the missile and the tactical situation.
7. Select and employ remote engagement procedures.

   a. Transmit/receive a request for a remote engagement using the proper engagement format.

   b. Provide precision coded LASER energy on the target in accordance with mission, enemy, terrain and weather, troops and support available, time available, and civil considerations.

   c. Receive and process the correct engagement mission format request.

8. Engage target(s) with the Hellfire missile system (as shooter). If required to Illuminate, designate, laser range find target, the crewmember at the payload station will observe the principles of safe laser operation and designate based on the operational parameters of the employed weapon system, target location, and the tactical situation.
9. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions:

   a. Autonomous.

      (1) The crew will determine whether the particular target is a feasible Hellfire target. When maneuvering the aircraft within the engagement limits of the missile, the aircraft operator (AO) must coordinate with the crewmember at the payload station prior to doing so. Each crewmember must know where the other is focused during the weapon engagement.

      (2) The AO will prepare the missile system, remain focused, and oriented on the target. The AO is responsible for clearing the aircraft and will verify that the crewmember at the payload station is ready to engage the target and maneuver the aircraft within the engagement limits of the missile. The aircraft operator will keep the aircraft in laser constraints until missile impact.

      (3) The crewmember at the payload station will keep the payload on target, prepare the laser, and announce when ready to engage. The crewmember at the payload station will announce if the engagement is a single target or multiple targets and will announce ready for each firing and when the laser is on. The crewmember at the payload station will announce laser on, missile launch, missile impact, laser off, and record battle damage assessment (BDA) data.

   b. Remote.

      (1) The designation of a target by a remote aircraft or ground designator potentially allows the launch aircraft to increase the stand-off range from the target. A remote engagement should be performed whenever the aircrew determines that the current mission situation requires and accommodates a remote target engagement. While maneuvering the aircraft within the engagement limits of the missile the AO must coordinate with the crewmember at the payload station and cooperative element personnel prior to engagement execution. Each crewmember must know where the other is focused during the weapon engagement. The crewmembers will

coordinate with the remote ground or aircraft designator and select the techniques and procedures necessary to properly engage the remote target. As a minimum, the coordination will ensure that the applicable minimum/maximum ranges, maximum offset angles, safety zone, laser code, and laser-on time requirements can be met. Coordinate with the remote designator over a pre-briefed voice or tactical messaging for fire mission request.

(2) The AO will make sure the missile is ready to fire (if shooting), remain focused and oriented on the target. The AO is responsible for clearing the aircraft and obstacle avoidance and will acknowledge that the crewmember at the payload station is ready to engage (or designate) the target and maneuver the aircraft to engage target. The AO will announce launching the missile and will coordinate with the crewmember at the payload station when repositioning the aircraft.

(3) The crewmember at the payload station will keep the crosshairs on target, prepare the laser designation system, and announce when ready to engage. The crewmember at the payload station will announce if the engagement is a single target or multiple targets and will announce ready for each firing and when the laser is on. The crewmember at the payload station will assist the aircraft operator as needed, clear the aircraft (duties permitting), announce missile impact, and record BDA data.

(4) The crewmembers primary consideration for selecting the missile delivery mode (direct, high, low) is the target type. Additional considerations include: 1) range to target, and 2) desired launch acceptability region (LAR)/weapons footprint (WFP) based on the engagement limits of the missile. The appropriate LAR/WFP symbology will display indication of the direction to fly the aircraft to meet the engagement limits of the missile.

2. Procedures.

a.   Autonomous missile engagement. Track the target with the payload, and designate the target with the laser. Determine range to the target. When the missile system is ready, maneuver the aircraft within the engagement limits of the missile, and verify that all engagement conditions are met before the missile is launched.

b.   Remote missile engagement. Coordinate with the remote designator to ensure that the launcher designator angle (LDA), safety fan, laser code, and laser designation time requirements can be met. Code the missile to the remote designator's laser code. When the missile system is ready, maneuver the aircraft to engage target and verify that all engagement conditions are met before the missile is launched. The following are example of procedures for analyzing remote engagements for the shooter to ensure that all items are systematically verified.

(1) Analyze the mission—Procedures for analyzing remote engagements based on the following technical parameters:

WARNING

Laser light is dangerous and can cause blindness if it enters the eye either directly or reflected from a surface. Personnel will wear approved laser protection whenever in a controlled area when laser rangefinder or laser target designators are being used.

(a) Launcher/designator angle—Determine whether the angle created by drawing a line between the observer/designator to the target and then back to the shooter is equal to or less than the maximum allowable. If the tactical situation allows, the shooter may have to reposition to meet requirements to accept the mission. If the requested number exceeds the number available, the mission may still be accepted with the number of missiles the shooter has available transmitted to the requestor in the accept message.

(b) Number of missiles—Determine whether the number of missiles requested or required are available. If the requested number exceeds the number available, the mission

may still be accepted with the number of missiles the shooter has available, but number of missiles on hand should be transmitted to the requestor in the accept message.

(c) Min/Max range—Determine whether the range to the target is within the allowable range for the type of shot to be performed. If the tactical situation allows, the shooter may have to reposition, or may adjust the type of shot to meet requirements to accept the mission.

(d) Safety fan—The safety fan is predetermined, based on an angle either side of a line from shooter to target. Ensure that the designator is not within the shooters safety fan. If the tactical situation allows, the shooter may have to reposition to ensure the designator is outside the safety fan.

(e) Obstacle clearance—Determine whether the missile can clear any obstacles on the gun target line for the type of shot to be performed. The shooter may have to reposition, if the tactical situation allows, or may adjust the type of shot (LOAL low/high/direct) to meet requirements to accept the mission.

Note. Cloud height: Not a factor for P+ and R hellfire missiles due to inertial guidance to get on target prior to laser capture

Note. If the shooter must reposition to meet the requirements to accept the mission, the accept message may be sent prior to moving.

(2) Accept or reject mission—Based on the analysis of tactical considerations and technical parameters, send an accept or reject message. If sending an accept message, it will include all changes made to meet the technical parameters verified in the analysis.

(3) Missile set-up—The following items must be verified:

(a) Laser codes—Ensure the missile(s) is/are coded to the match the laser code of the lasing participant.

(b) Delivery mode—Choose LOAL direct, LOAL low, LOAL high, based on the mission requirements.

(4) Choose and set the LAR/WFP. The LAR/WFP overlay will display indication of the direction to fly the aircraft to meet and be within the engagement limits of the missile

(5) Arm the master arm switch.

(6) Verify missile configuration is properly set (firing crewmember). The appropriate LAR/WFP overlay will be displayed indicating the direction to fly the aircraft (based on target information and missile capabilities) to fire the missile. When within LAR/WFP constrains, the region or footprint changes from dashed red line to solid green line. However, a gray line indicates the aircraft is outside of the optimal altitude range/limits of the missile.

(7) The Hellfire missile is now ready to be fired. The ready command can be sent. After the ready command the shooter must wait for the fire command from the observer. The observer must be prepared to lase when the fire command is sent.

(8) Shoot the mission—After the fire command is received the launch aircraft will transmit voice "Shot, Over" and will launch the missile(s) only upon receipt of a "Shot, Out" from the designator.

(9) After missile impact, the designator will announce missile impact, and report battle damage assessment (BDA).

(10) Weapons Safe—Master arm safe and laser disarm as required by the situation. Recode remaining Hellfire missiles as necessary.

Note. The designating platform establishes the number of desired missiles and time interval during the initial remote request. Launch aircraft must be prepared to fire additional missiles due to multiple co-located targets, a miss, or malfunction. During multiple missile deliveries to co-located targets the designator will transmit "Ready, Over" to the launch platform. The team completes the firing sequence (for example with "Fire Over," "Shot Over").

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the actual UAS.

    Note. If live missiles are not available, evaluation may be conducted using a Captive Aviation Training Missile or unmanned aircraft system embedded training software or an accredited Gray Eagle simulator to evaluate weapon system proficiency.

REFERENCES: Appropriate common references, FM 3-04.126, FM 3-04.155, TC 3-04.45, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 1471

Perform Target Handover

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, and a one-system remote video terminal in a training or tactical environment.

STANDARDS:

1. Perform target handover.
2. Use the communications procedure that will best accomplish the mission.
3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions**.** The aircraft operator's (AO's) main focus will be on the flight instruments to ensure the aircraft is responding appropriately to airspeed, altitude and heading inputs to achieve proper aircraft position. The crewmember at the payload station main focus will be to coordinate with the AO to maintain proper loiter, in order to maintain proper payload position to identify and maintain the crosshairs on the target. The crewmember at the payload station will prepare target information for target handover.

2. Procedures. Using the proper radio phraseology and signal operating/operation instructions procedures, the crew will alert the attack element, describe the target, and give its location. Both the UAS and the attack element aircrews must understand the method for locating the target, the execution command, and post-attack method. Examples of standardized elements for target hand-over are as follows:

   a. Alert and target description. This alerts the attack element that a target hand over is about to occur. It identifies the sender and describes the target (type, number, and activity); for example, "K13 (AH-64), this is KO6 (UAS), three tanks and four BMPs moving west."

   b. Target location. The aircraft operator/crewmember at the payload station gives the grid location or direction of the target in degrees and range from a known position (for example, "120 degrees at 2,800 meters from checkpoint 223").

   c. Method of attack. The aircraft operator/crewmember at the payload station describes the planned scheme of maneuver, fire distribution, and maneuver for the attack; for example, "Attack targets west of north-south road."

   d. Post-attack method. The unmanned aircraft will provide a battle damage assessment to enable the attack aircraft to remain masked. The AO/crewmember at the payload station will provide new target or updated target information for re-attack.

ENVIRONMENTAL CONSIDERATIONS: A thorough crew briefing should be conducted prior to weapon engagement operations; crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, FM 3-04.126, FM 3-04.155, TC 3-04.45, DTM 1-1550-696-10, and unit SOP.

> *Note.* Review TC 3-04.42 and TC 3-04.44 for familiarization of attack and observation helicopter's target handover procedures.

TASK 1473

Perform Call for/Adjust Indirect Fire

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, on an approved range or simulated tactical environment.

STANDARDS:

1.   The crew will positively identify the target and perform the call for fire and artillery adjustment following the format in ATP 3-09.30.

2.   Upon positive identification of the target, the aircraft operator will maneuver the unmanned aircraft (UA) in order to provide an unobstructed view.

3.   The aircraft operator (AO) and crewmember at the payload station will coordinate on who will freeze the video and perform the call for fire and artillery adjustment function to be communicated to the artillery unit.

4.   Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions: The AO's main focus will be on the flight instruments to ensure the aircraft is responding appropriately to airspeed, altitude and heading inputs to achieve proper aircraft position. The crewmember at the payload station's main focus will be to locate and identify the target. The focus of the AO and crewmember at the payload station will then be to coordinate and follow the checklist (CL) to accomplish an artillery adjustment on the target.

   a.   Crewmember at the payload station actions. The crewmember at the payload station will coordinate the checklist with the AO to ensure that all items are accomplished in order. The crewmember at the payload station will maintain the video crosshairs on the target (especially prior to the video being frozen) for the artillery adjustment function to be performed and during the period the AO's video is frozen.

   b.   AO actions. The AO will maintain an orbit above or to the side of the target. The crewmember at the payload station will attain optimum resolution or better prior to freezing the video. Upon freezing the video, the aircraft crewmember at the payload station will perform the artillery adjustment procedure and provide the data to the firing artillery unit.

2. Procedures:

   a.   Planned targets. Planned targets may be scheduled or on call. They should be planned against confirmed, suspected, or likely enemy locations and on prominent terrain to serve as reference points for shifting fires onto targets of opportunity.

   b.   Unplanned targets. Targets of opportunity are engaged by grid or shift from a known point. Subsequent indirect artillery adjustments are made based on a reference line, and indirect aerial fires can be adjusted similarly.

   c.   Call-for-fire elements in table A-9, page A-65. The call-for-fire elements are—

   (1)   Observer identification and warning order-adjust fire, fire for effect, suppression, immediate suppression.

   (2)   Method of target location. Target location is transmitted—

      (a)   As a specific grid coordinate to the nearest 10 meters (for example, grid FV-1234-5678). (The target locate is the most accurate means of obtaining this information.)

      (b)   As a known point (for example, those preplanned targets using the target designator [target] AB 1002]).

      (c)   As a shift from a known point (from target AB 1002, direction 030 degrees, right 400, add (400).

   (3)   Target description ("infantry in the open").

   (4)   Method of engagement ([optional] danger close, mark, high angle, ammunition/fuze type).

(5) Method of fire and control ([optional] at my command, cannot observe, time on target).

d.   Message to observer. After the Fire Direction Center processes the call for fire, it should send the following:

(1) Callsign of the unit firing the mission (mandatory). This is given as the last letter of the callsign of the unit firing the mission. If two letters are given, the first letter is the unit that will fire for effect and the second is the unit firing the adjusting rounds.

(2) Changes to the call for fire (if any are made).

(3) Number of rounds (mandatory). Number of rounds per tube that will fire for effect.

(4) Target number (mandatory). For tracking subsequent missions or to record as a target for future use.

(5) TOF. Time in seconds from shot to impact. Announced when time of flight is requested by observer or when firing high angle, aerial observer, moving target, or coordinated illumination missions.

e.   Adjustments.

(1) Observer target-360 method. The crewmember at the payload station locates the point of impact and then calculates the easting and northing coordinates of the point of impact from the coordinates of the target.

(2) Map-Terrain association. This method may be required if the laser or other subsystem is not operational. Use the map graphics user interface display. Plot the target on the map. Observe the point of impact and the surrounding terrain. View the map and plot the impact point based on terrain association. Make the adjustment by calculating difference in the easting and northing of the two points.

f. When the target is neutralized request to, "record as target," if desired. Send an "end of mission" message with a BDA or an "unable to observe" message.

Table A-9. Sample format for call for/adjust indirect fire

Adjust Fire Mission (Grid) Initial Fire Request	
Observer	*Fire Direction Center*
Z57 THIS IS GRAY EAGLE 71, ADJUST FIRE, OVER. GRID NK18051370 ALTITUDE 345, OVER. INFANTRY PLATOON IN THE OPEN, ICM (improved conventional munitions) IN EFFECT, WHEN READY, OVER. I AUTHENTICATE (if required) CHARLIE, OUT.	GRAY EAGLE 71 THIS IS Z57, ADJUST FIRE OUT. GRID NK18051370 ALTITUDE 345, OUT. INFANTRY PLATOON IN THE OPEN, ICM IN EFFECT, WHEN READY, AUTHENTICATE (if required) PAPA BRAVO, OVER.
Message to Observer (MTO)	
Observer	*Fire Direction Center*
MTO, Z, 1 ROUNDS TARGET AF1027, BREAK, DIRECTION 095 DEGREES, OVER.	MTO, Z, 1 ROUND, TARGET AF1027, OVER. DIRECTION 095 DEGREES, OUT.
Note. Send direction before or with the first subsequent correction.	

Table A-9. Sample format for call for/adjust indirect fire, continued

Adjustment of Rounds	
Observer	*Fire Direction Center*
Z57 THIS IS GRAY EAGLE 71, DIRECTION MAGNETIC 150 DEGREES, LEFT 300, DROP 200, REPEAT, OVER.	GRAY EAGLE 71 THIS IS Z57, DIRECTION MAGNETIC 150 DEGREES, LEFT 300, DROP 200, REPEAT, OUT.

Note. If the initial round(s) do not impact on the target, the observer should send a left/right and/or add/drop adjustment (distance from the target in meters) correction enough to place the next round on or as close as possible to the target. If observer is providing adjustments from different headings, the heading must be included when providing adjustments to subsequent impacted rounds.

Fire For Effect Rounds	
Observer	*Fire Direction Center*
Z57 THIS IS GRAY EAGLE 71, FIRE FOR EFFECT, OVER.	GRAY EAGLE 71 THIS IS Z57, FIRE FOR EFFECT OUT.

Note. Fire for effect is entered during an adjust fire mission when the observer is certain that the target location is accurate and that the rounds fired should have the desired effect on the target so that little or no adjustment is required.

Initial Fire For Effect Results		
Results Of Fire For Effect	*Observer*	*Fire Direction Center*
ACCURATE AND INSUFFICIENT	REPEAT, OVER	REPEAT, OUT.
ACCURATE AND SUFFICIENT	RECORD AS TARGET, END OF MISSION, INFANTRY PLATOON NEUTRALIZED, OVER.	RECORD AS TARGET, END OF MISSION, INFANTRY PLATOON NEUTRALIZED, OUT.

ENVIRONMENTAL CONSIDERATIONS: A thorough crew briefing should be conducted prior to weapon engagement operations; crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, ATP 3-09.30, ATP 3-09-32, FM 3-04.126, FM 3-04.155, FM 6-99, DTM 1-1550-696-10, and unit SOP.

TASK 1802

Perform After Landing Procedures

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1.   Without error, perform full stop taxi back checks through tactical automatic landing system (TALS) equipment power down checks according to the aircraft DTM 1-1550-696-10 operator's manual and/or checklist.

2.   Determine the system status.

3.   Correctly perform crew coordination actions.

DESCRIPTION:

1.   Crew actions. The aircraft operator (AO) will focus attention primarily on the nose camera video while aircraft is moving for obstacle avoidance. The AO at the payload station will assist in clearing the aircraft using the EO/IR sensor. After exiting the active runway, each crewmember will complete the required checks or procedures I/AW DTM 1-1550-696-10 or DTM 1-1550-696-CL.

2.   Procedures. The air/ground crewmembers will perform the following procedures—

a.   The air/ground crewmembers will complete the full stop taxi back and after landing checks in accordance DTM 1-1550-696-10 or DTM 1-1550-696-CL.

b.   Once aircraft has arrived at parking location, the air/ground crewmembers will complete all required steps according to their areas of responsibilities beginning at aircraft shutdown through TALS equipment power down checks in accordance with DTM 1-1550-696-10 or DTM 1-1550-696-CL. Verify all checks with the checklist.

c.   Ensure the appropriate information and any faults found are entered on the appropriate forms.

d.   Correctly perform crew coordination actions.

Note. Taxi aircraft clear of runway prior to initiating after landing section of checklist.

ENVIRONMENTAL CONSIDERATIONS: During times of limited visibility, reduced taxi speeds should be considered to allow a greater margin of safety. Extra care should be used whenever taxiing in areas where obstacles are difficult to see.

TRAINING AND EVALUATION REQUIREMENTS:

1.   Training may be conducted academically (for forms and records review), in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

2.   Evaluation will be conducted in the UAS, including forms and records completion.

Note. The AC will ensure that the flight plan is closed.

REFERENCES: Appropriate common references, AR 95-23, DA Pam 738-751, FM 3-04.203, FM 3-04.240, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 2170

Conduct Levels of Interoperability With Cooperative Element

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, and a non-UAS cooperative element with the capability to obtain control of the unmanned aircraft (UA).

STANDARDS:

1. Ensure proper coordination between ground control station (GCS) and cooperative element are completed prior to execution of levels of interoperability (LOI) operations.
2. Configure the GCS with the correct setup and link information as required.
3. Perform LOI transfer between GCS and cooperative element.
4. Correctly perform crew coordination procedures.

DESCRIPTION:

1. Crew actions. Crewmembers will complete the required LOI crew coordination with cooperative element. Complete system setup, configuration, and upload procedures pertaining to their crew duties according to the checklist and per the crew briefing.
2. Procedures:

    a.   The aircraft operator (AO) will enable and configure the GCS with the modem (modem assembly [MA] or satellite communications [SATCOM] modem assembly [SMA]) that the receiving system will be using depending on the type of UA datalink (LOS or SATCOM) to perform LOI operations.

    b.   The AO will setup, upload the authorization schedule to ensure that LOI operations only takes place during the scheduled time period and with the desired non-UAS operator.

    c.   The AO will adjust the EO/IR deadband and rate gain joystick settings prior to the handoff to meet the preferences of the non-UAS operator.

    d.   The crew will identify the mission requirements and coordinate mission planning to ensure accomplishment of the LOI mission. The crew should know and understand the factors requiring the mission to be aborted or altered.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 2305

Operate Synthetic Aperture Radar

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, with synthetic aperture radar (SAR) payload operational checks complete.

STANDARDS:

1. Without error, perform SAR mode setup, checks, and operational procedures according to DTM 1-1550-696-10 and/or DTM1-1550-696-CL manuals.
2. Correctly determine any malfunctions and apply corrective action/troubleshooting procedures.
3. Correctly determine the operational status of the SAR.
4. Employ SAR modes (SAR Spot, SAR Strip–Transit, and SAR Strip–Geo modes).
5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions:

   a.   The crewmember at the payload station will perform setup and operational checks as necessary to determine whether the SAR mode is operating properly. The crewmember at the payload station will determine the effects of any SAR discrepancies against the needs of the mission. The crewmember at the payload station will announce the status of the SAR when the checks are completed and record any discrepancies on DA Form 2408-13 (Aircraft Status Information Record).

   b.   The crewmember at the payload station will operate the SAR in a manner that will take full advantage of the payload's SAR mode optimum capabilities (SAR Spot, SAR Strip–Transit, and SAR Strip–Geo modes) for a given situation (mission, enemy, terrain and weather, troops and support available, time available, civil considerations [METT-TC]) in acquiring, tracking, identifying, and marking targets.

2. Procedures:

   a.   The crewmember at the payload station will perform setup and operational checks as necessary to determine whether the SAR mode is operating properly. The crewmember at the payload station will announce when he/she completes the checks. The crew will determine the effects of a SAR malfunction and if the system can be used to perform the assigned mission. The aircraft operator performs duties as assigned.

   b.   Configure and operate the SAR mode according to DTM 1-1550-696-10 and/or DTM 1-1550-696-CL manuals. Select the various methods and payload features that offer different imaging capability, such as high resolution image of a specified ground area, broadside continuous strip, and forming a continuous path between waypoints. Adjust the SAR as necessary to obtain the best resolution. Select the appropriate sub-mode operation to search for, and acquire targets.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 2307

Operate Ground Moving Target Indicator

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL, with ground moving target indicator (GMTI) payload operational checks complete.

STANDARDS:

1. Without error, perform GMTI mode setup, checks and operational procedures according to DTM 1-1550-696-10 and/or DTM 1-1550-696-CL manuals.

2. Correctly determine any malfunctions and apply corrective action/troubleshooting procedures.

3. Correctly determine the operational status of the GMTI.

4. Employ GMTI modes (GMTI–Geo, and GMTI Angle modes).

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions:

   a.   The crewmember at the payload station will perform setup and operational checks as necessary to determine whether the GMTI mode is operating properly. The crewmember at the payload station will determine the effects of any GMTI discrepancies against the needs of the mission. The crewmember at the payload station will announce the status of the GMTI when the checks are completed and record any discrepancies on DA Form 2408-13-1.

   b.   The crewmember at the payload station will operate the GMTI in a manner that will take full advantage of the payload's GMTI mode optimum capabilities (GMTI–Geo, and GMTI Angle modes) for a given situation (mission, enemy, terrain and weather, troops and support available, time available, civil considerations) in acquiring, tracking, identifying and marking targets.

2. Procedures.

   a.   The crewmember at the payload station will perform setup and operational checks as necessary to determine whether the GMTI mode is operating properly. The crewmember at the payload station will announce when he completes the checks. The crew will determine the effects of a GMTI malfunction and if the system can be used to perform the assigned mission. The aircraft operator performs duties as assigned.

   b.   Configure and operate the GMTI mode according to DTM 1-1550-696-10 and/or DTM 1-1550-696-CL manuals. Select the various methods and payload features that offer different imaging capability, such as high resolution image of a specified ground point, and region of interest. Adjust the GMTI as necessary to obtain the best resolution. Select the appropriate sub-mode operation to search for, and acquire targets.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 2476

Perform Airborne Data Relay Mission

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:
1. Correctly perform the relay mission.
2. Ensure that the geometry of the aircraft will support good relay operations.
3. Correctly perform crew coordination actions.

DESCRIPTION:
1. Crew actions. The crew will identify the mission requirements and coordinate mission planning to ensure accomplishment of the relay mission. The crew should know and understand the factors requiring the mission to be aborted or altered.
2. Procedures:
   a.   Mission brief. Determine relay orbit and alternate orbit tracks.
   b.   During flight. The aircraft operator (AO) will perform the following actions:
      (1) Fly the aircraft to the entry point of the relay program, and report to the appropriate facility (ground control station [GCS] or launch recovery GCS).
      (2) Adjust airspeed and altitude to the desired relay configuration.
      (3) Establish relay with the mission aircraft and conduct the mission.
      (4) Both AOs will monitor their respective GCS station aircraft instruments and respond to problems appropriately.

ENVIRONMENTAL CONSIDERATIONS: A thorough crew briefing should be conducted prior to weapon engagement operations; crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:
1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.
2. Evaluation will be conducted in the UAS.

REFERENCES: Appropriate common references, DTM 1-1550-696-10, DTM 1-1550-696-CL, and unit SOP.

TASK 4001

Perform Prior to Maintenance Functional Checks Inspection (Ground/Airborne)

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1. Correctly perform before exterior and exterior inspections in accordance with DTM -1550-696-10 or DTM 1-1550-696-CL.

2. Correctly identify and document any discrepancies.

3. Determine any required maintenance functional ground and/or airborne checks.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The air/ground crewmembers will ensure that a thorough before exterior inspection, and exterior inspection check pertaining to their crew duties per crew briefing are accomplished in accordance with DTM 1-1550-696-10 and/or checklist DTM 1-1550-696-CL. The aircraft commander (AC) will ensure the aircraft logbook and/or laptop computer forms and records are reviewed and appropriate entries made according to DA Pam 738-751. The air/ground crew personnel will determine the required maintenance functional checks (ground/airborne) to be completed. The AC will brief the ground crewmembers and any additional support personnel concerning operation on or around the unmanned aircraft during ground operations and will ensure that ground communication capability is adequate. Additionally, the AC will stress any applicable ground or airborne safety considerations and/or procedures during the briefing, and will ensure that a final walk-around inspection is completed prior to run-up/flight operations are performed.

2. Procedure. Review the aircraft logbook and/or laptop computer forms and records to determine the necessary function checks to be performed. Use additional publications and references as necessary. Conduct a risk assessment of the mission. Perform before exterior and exterior inspection with special emphasis on areas or systems where maintenance was accomplished. Verify all test equipment is correctly installed and secured (if applicable). Brief other crewmembers and support personnel on crew coordination responsibilities and conduct of the mission. Emphasize safety procedures to be performed during maintenance functional checks.

ENVIRONMENTAL CONSIDERATIONS: Snow, sand, and dust: If the aircraft exterior inspection has been conducted any time other than immediately prior to flight, consideration should be given to reinstalling aircraft covers to prevent accumulation of snow, sand, and dust in aircraft and equipment. Ensure all ice/snow accumulations are removed from the aircraft before starting engine.

NIGHT CONSIDERATIONS: Apply the appropriate common considerations. A white lens flashlight should be used if performing the exterior inspection during the hours of darkness. Fluid leaks, and other defects may be difficult to see using a flashlight with a colored lens. If circumstances permit, accomplish exterior inspection during daylight hours.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, or in the MQ–1C UA.

2. Evaluation will be conducted in the actual MQ–1C UAS.

REFERENCES: Appropriate common references, AR 95-23, DA Pam 738-751, TM 1-1500-328-23, DTM 1-1550-696-10, DTM 1-1550-696-CL, TM 55-1500-342-23, and unit SOP.

TASK 4077

Perform Post-Maintenance Functional Checks Inspection (Ground/Airborne)

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1.   Without error, perform procedures and checks according to DTM 1-1500-696-10 and/or DTM 1-1500-696-CL.

2.   Correctly check and perform all items in sequence.

3.   Correctly determine all malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

4.   Correctly perform crew coordination actions.

DESCRIPTION:

1.   Crew actions. After the air/ground crew completes aircraft shutdown/ground control station power down checks and procedures, the aircraft commander (AC) will make sure that a walk around the aircraft is accomplished while focusing on the areas where maintenance was accomplished to ensure that no leaks, deficiencies or faults have occurred. Each crew member will complete the required checks pertaining to their assigned crew station according DTM 1-1550-696-10 or CL. The AC will ensure any deficiencies/faults discovered during the maintenance functional checks (ground/airborne) are accurately recorded on the appropriate forms and records. The AC will ensure the aircraft logbook and/or laptop computer forms and records are completed and appropriate entries made as per DA Pam 738-751. The AC will also ensure the results of the checks are recorded to include any specific readings.

2.   Procedures. The air/ground crew will identify which post maintenance inspections and checks to perform. The AC will ensure any required post operational maintenance functional checks are accomplished in sequence, and record the results of checks as appropriate.

ENVIRONMENTAL CONSIDERATIONS: During post-maintenance functional checks inspection stay cognizant of weather conditions to include temperatures, icing, winds, precipitation, and thunderstorms.

TRAINING AND EVALUATION REQUIREMENTS:

1.   Training may be conducted academically, or in the MQ–1C UAS.

2.   Evaluation will be conducted in the actual MQ–1C UAS.

REFERENCES: Appropriate common references, AR 95-23, DA Pam 738-751, TM 1-1500-328-23, DTM 1-1550-696-10, DTM 1-1550-696-CL, TM 55-1500-342-23, and unit SOP.

TASK 4101

Perform Maintenance Functional Checks (Ground)

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1.   Without error, perform procedures and checks according to DTM 1-1500-696-10 and/or DTM 1-1500-696-CL.

2.   Correctly check and perform all items in sequence.

3.   Correctly determine all malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

4.   Correctly perform crew coordination actions.

DESCRIPTION:

1.   Crew actions. The aircraft operator (AO) conducting the ground maintenance functional checks will ensure the checks are conducted according to DTM 1-1550-696-10, and checklist. The AO may direct other crewmembers to perform or assist in the required checks. The air/ground crew personnel will determine the required ground maintenance functional check requirements to be completed. Each crewmember will complete the required checks or procedures according to DTM 1-1550-696-10, CL.

2.   Procedures. Perform the checks according to DTM 1-1550-696-10, and CL. Other publications and references may be used as necessary. Conduct a briefing to delineate duties of the AO and other crewmembers that may be required during the ground maintenance functional checks while stressing safety while performing ground operations. The AO will focus attention on the aircraft performance during ground maintenance functional checks. Prior to the individual check, review the task in the appropriate manual to ensure all required items are completed. Record the data, as required, for the required checks. The AO may dictate the recording be accomplished by other crewmembers. Once tasks and procedures are completed, the AO will announce that the task has been completed.

ENVIRONMENTAL CONSIDERATIONS: For cold weather operations, check aircraft surfaces with payload for icing conditions.

TRAINING AND EVALUATION REQUIREMENTS:

1.   Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using UAS-embedded training software.

2.   Evaluation will be conducted in the actual UAS.

REFERENCES: Appropriate common references, aircraft logbook and historical records, applicable airworthiness directives or messages from Program Executive Officer Aviation (PEO-AV), AR 95-23, DA Pam 738-751, TM 1-1500-328-23, DTM 1-1550-696-10, DTM 1-1550-696-CL, TM 55-1500-342-23, and unit SOP.

TASK 4102

Perform Maintenance Functional Checks (Airborne)

CONDITIONS: Given an MQ–1C unmanned aircraft system (UAS), DTM 1-1550-696-10, and/or DTM 1-1550-696-CL.

STANDARDS:

1. Without error, perform procedures and checks according to DTM 1-1500-696-10 and/or DTM 1-1500-696-CL.

2. Correctly check and perform all items in sequence.

3. Correctly determine all malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The aircraft operator (AO) conducting the airborne maintenance functional checks will ensure the checks are conducted according to DTM 1-1550-696-10, and checklist. The AO may direct the other crewmembers to perform or assist in the required checks. The air/ground crew personnel will determine the required airborne maintenance functional checks. Each crewmember will complete the required checks or procedures according to DTM 1-1550-696-10, CL.

2. Procedure. Perform the checks according to DTM 1-1550-696-10, and CL. Other publications and references may be used as necessary. Conduct a briefing to delineate duties of the AO and other crewmembers that may be required during the airborne maintenance functional checks while stressing safety during airborne operations. The AO will focus attention on the aircraft performance during aircraft taxi through landing operations. Prior to the individual check, review the task in the appropriate manual to ensure all required items are completed. Record the data, as required, for the required checks. The AO may dictate the recording be accomplished by other crewmembers. Once tasks and procedures are completed, the AO will announce that the task has been completed.

ENVIRONMENTAL CONSIDERATIONS:

1. Cold Weather Operations: Check aircraft surfaces with payload for icing conditions.

2. Crosswind Flight Considerations: A prolonged slip will result in an increase in the rate of descent and power will be required to resume a normal descent.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, in the MQ–1C UAS, in an accredited MQ–1C UAS simulator, or using the UAS-embedded training software.

2. Evaluation will be conducted in the actual UAS.

REFERENCES: Appropriate common references, aircraft logbook and historical records, applicable airworthiness directives or messages from Program Executive Officer Aviation (PEO-AV), AR 95-23, DA Pam 738-751, TM 1-1500-328-23, DTM 1-1550-696-10, DTM 1-1550-696-CL, TM 55-1500-342-23, and unit SOP.

Glossary

A	operator on flight controls
AAR	after action review
AC	aircraft commander
ACT-E	aircrew coordination training-enhanced
ADP	Army Doctrine Publication
AIM	aeronautical information manual
AIRF	aircrew information reading file
AO	aircraft operator
APA	aviation physician assistant
APART	annual proficiency and readiness test
AR	Army Regulation
ARNG	Army National Guard
ARTEP	Army training and evaluation program
ATC	air traffic control
ATLS	automatic take-off and landing system
ATM	aircrew training manual
ATP	aircrew training program
ATS	air traffic services
BDA	battle damamge assessment
BEN	basic encyclopedia number
BFT	Blue Force Tracker
°C	degrees Celsius
CAFRS	centralized aviation flight records system
CALFEX	combined arms live-fire exercise
CAT	combined arms training
CATS	combined arms training strategy
CBAT	computer-based aircraft survivability equipment training
CBRNE	chemical, biological, radiological, nuclear, and high-yield explosives
CID	combat identification
CL	checklist
COA	course of action
CTC	combat training center
CTG	commander's training guidance
CTL	commander's task list
CUCS	Core UAS Control System
DA	Department of the Army
DAC	Dpartment of the Army civilian
DA Pam	Department of the Army Pamphlet

DART	downed aircraft recovery team
DOD	Department of Defense
DTG	date-time group
DTM	draft technical manual
DTV	day television
E-4	Army specialist
E-6	Army staff sergeant
EDI-PI	electronic data interchange personal identifier
EO	electro-optical
FAA	Federal Aviation Administration
FAC	flight activity category
FAR	Federal Aviation Regulation
FIH	flight information handbook
FLIP	flight information publication
FM	field manual
FOV	field of view
FS	flight surgeon
FT	feet
FTX	field training exercise
GCS	ground control station
GDT	ground data terminal
GMTI	ground moving target indicator
GPS	global positioning system
GT	gunnery table
GTP	ground tactical plan
HF	high frequency
HIRTA	high intensity radio transmission area
HQDA	Headquarters, Department of the Army
IAW	in accordance with
IATF	individual aircrew training folder
ICAO	International Civil Aviation Organization
IFF	identification friend or foe
IFRF	individual flight record folder
IIMC	inadvertent instrument meteorological condition
IMINT	imagery intelligence
IO	instructor operator
IR	infrared
ISAQ	interim statement of airworthiness qualification
KIAS	knots indicated airspeed
LAO	local area orientation
LASER	light amplification by stimulated emission of radiation

LLTV	low-light television
LOAL	lock-on after launch
LOI	level of interoperability
LOS	line of sight
MARSA	military assumes responsibility for separation of aircraft
MAX	maximum
MC	mission coordinator
METAR	meteorological aviation report
METL	mission essential task list
METT-TC	mission, enemy, terrain and weather, troops and support available, time available, and civilian considerations
MG	master gunner
MGRS	military grid reference system
MIJI	meaconing, intrusion, jamming, and interference
MOPP	mission-oriented protective posture
MOS	military occupational speciality
MTOE	modification table of organization and equipment
MTP	mission training plan
NCO	noncommissioned officer
NGR	National Guard regulation
NLT	no later than
NOTAM	notice to airmen
NVD	night vision device
P	operator on payload controls
P@C	point-at-coordinate
PCS	permanenent change of station
PFE	proficiency flight evaluation
PID	personnel identifier
PO	payload operator
RCR	runway condition rating
RL	readiness level
S-3	operations staff officer
SAAO	state Army aviation officer
SAR	synthetic aperture radar
SATCOM	satellite communication
SO	standardization instructor operator
SOP	standing operating procedure
SSN	social security number
STANAG	standardization agreement
STX	situational training exercise
TACSOP	tactical standing operating procedure
TADSS	training aids, devices, simulators, and simulations

TALS	tactical automated landing system
TB	technical bulletin
TC	training circular
TDA	table of distribution and allowances
TD	temporary duty
TEMP	temperature
TM	technical manual
T/O	takeoff
TOE	table of organization and equipment
TOT	time on target
TRADOC	United States Army Training and Doctrine Command
TTP	tactics, techniques, and procedures
UA	unmanned aircraft
UAC	unmanned aircraft crewmember
UAS	unmanned aircraft system
UHF	ultra high frequency
USAACE	United States Army Aviation Center of Excellence
USAR	United States Army Reserve
UT	unit trainer
UTL	unit task list
UTM	universal transverse mercator
VFR	visual flight rules
VHF	very high frequency
VMC	visual meteorological conditions
VS	versus
WCA	warnings, cautions, and advisories
WO	warrant officer
WT	weight

SECTION II–TERMS

Vy	best rate-of-climb speed

References

REQUIRED PUBLICATIONS

ADRP 1-02. *Terms and Military Symbols.* 24 September 2013.

JP 1-02. *Department of Defense Dictionary of Military and Associated Terms.* 8 November 2010.

RELATED PUBLICATIONS

ARMY PUBLICATIONS

Most Army publications are available online at www.apd.army.mil

ADP 5-0. *The Operations Process.* 17 May 2012.

ADP 7-0. *Training Units and Developing Leaders.* 23 August 2012.

AR 40-8. *Temporary Flying Restrictions Due to Exogenous Factors Affecting Aircrew Efficiency.* 16 May 2007.

AR 40-501. *Standards of Medical Fitness.* 14 December 2007.

AR 95-2. *Airspace, Airfields/Heliports, Flight Activities, Air Traffic Control, and Navigational Aids.* 10 April 2007.

AR 95-10. *Department of Defense Notice to Airmen (NOTAM) System.* 3 June 2011.

AR 95-20. *Contractor's Flight and Ground Operations.* 21 August 2013.

AR 95-23. *Unmanned Aircraft System Flight Regulations.* 7 August 2006.

AR 385-10. *The Army Safety Program.* 27 November 2013.

AR 385-63. *Range Safety.* 30 January 2012.

AR 350-1. *Army Training and Leader Development.* 18 December 2009.

ATP 1-02.1. *Multi-Service Brevity Codes.* 20 September 2012.

ATP 3-09.30. *Techniques for Observed Fire.* 2 August 2013.

ATP 3-09.32. *JFIRE Multi-Service Tactics, Techniques, and Procedures for the Joint Application of Firepower.* 30 Nov 2012.

ATP 5-19. *Composite Risk Management.* 14 April 2014.

ATP 6-02.72. *Tac Radios Multi-Service Tactics, Techniques, and Procedures for Tactical Radios.* 5 November 2013.

DA Pam 350-38. *Standards in Training Commission.* 18 November 2013.

DA Pam 385-40. *Army Accident Investigation and Reporting.* 6 March 2009.

DA Pam 385-90. *Army Aviation Accident Prevention Program.* 28 August 2007.

DA Pam 738-751. *Functional Users Manual for the Army Maintenance Management System-Aviation (TAMMS-A).* 28 February 2014.

FM 1-100. *Army Aviation Operations.* 21 February 1997.

FM 3-04.111. *Aviation Brigades.* 7 December 2007.

FM 3-04.120. *Air Traffic Services Operations.* 16 February 2007.

FM 3-04.126. *Attack Reconnaissance Helicopter Operations.* 16 February 2007.

FM 3-04.140. *Helicopter Gunnery (including C1).* 14 July 2003.

FM 3-04.155. *Army Unmanned Aircraft System Operations.* 29 July 2009.

FM 3-04.203. *Fundamentals of Flight.* 7 May 2007.

FM 3-04.240. *Instrument Flight for Army Aviators.* 30 April 2007.

FM 3-04.300. *Airfield and Flight Operations Procedures.* 12 August 2008.

FM 3-04.513. *Aircraft Recover Operations.* 21 July 2008.

FM 3-11. *Multiservice Doctrine for Chemical, Biological, Radiological, and Nuclear Operations*. 1 July 2011.

FM 3-34.170. *Engineer Reconnaissance*. 25 March 2008.

FM 6-02.53. *Tactical Radio Operations*. 5 August 2009.

FM 6-22.5. *Combat and Operational Stress Control Manual for Leaders and Soldiers*. 18 March 2009.

FM 6-99. *U.S. Army Report and Message Formats*. 19 August 2013.

FM 7-15. *The Army Universal Task List*. 27 February 2009.

TB MED 524. *Occupational and Environmental Health: Control of Hazards to Health from Laser Radiation* . 31 January 2006.

TC 3-04.7. *Army Aviation Maintenance*. 2 February 2010.

TC 3-04.42. *Aircrew Training Manual, Attack Helicopter, AH-64D*. 31 May 2013.

TC 3-04.44. *Aircrew Training Manual, OH-58D, Kiowa Warrior*. 25 March 2013.

TC 3-04.45. *Combat Aviation Gunnery*. 29 January 2014.

TC 3-04.93. *Aeromedical Training for Flight Personnel*. 31 August 2009.

TC 3-17. *Combat Identification (CID) Training Integration*. 6 November 2007.

TC 3-25.26. *Map Reading and Land Navigation*. 15 November 2013.

TM 1-1500-328-23. *Technical Manual Aeronautical Equipment Maintenance Management Policies and Procedures*. 30 July 1999.

TM 11-5820-890-10-1. *Operator`s Manual for SINCGARS Ground Combat NET Radio, ICOM Manpack Radio AN/PRC-119A (NSN 5820-01-267-9482) (EIC: L2Q) Short Range Vehicular Radio AN/VRC-87A (NSN 5820-01-267-9480) (EIC: L22) Short Range Vehicular Radio With Single Radio Mount AN/VRC-87C (NSN 5820-01-304-2045) (EIC: GDC) Short Range Vehicular Radio With Dismount AN/VRC-88A (NSN 5820-01-267-9481) (EIC: L23) Short Range Vehicular Radio with Dismount and Single Radio Mount AN/VRC-88C (NSN 5820-01-304-2044) (EIC: GDD) Short Range/Long Range Vehicular Radio AN/VRC-89A (NSN 5820-01-267-9479) (EIC: L24) Long Range Vehicular Radio AN/VRC-90A (NSN 5820-01-268-5105) (EIC: L25) Short Range/Long Range Vehicular Radio With Dismount AN/VRC-91A (NSN 5820-01-267-9478) (EIC: L26) Long Range/Long Range Vehicular Radio AN/VRC-92A (NSN 5820-01-267-9477) (EIC: L27)*. 1 September 1992.

TM 11-5820-890-10-8. *Operator`s Manual for SINCGARS Ground Combat NET Radio, ICOM Manpack Radio, AN/PRC-119A (NSN 5820-01-267-9482) (EIC: L2Q), Short Range Vehicular Radio AN/VRC-87A (NSN 5820-01-267-9480) (EIC: L22), Short Range Vehicular Radio With Single Radio Mount AN/VRC-87C (NSN 5820-01-304-2045) (EIC: GDC), Short Range Vehicular Radio With Dismount AN/VRC-88A (NSN 5820-01-267-9481) (EIC: L23), Short Range/Long Range Vehicular Radio AN/VRC-89A (NSN 5820-01-267-9479) (EIC: L24), Long Range Vehicular Radio AN/VRC-90A (NSN 5820-01-268-5105) (EIC: L25), Short Range/Long Range Vehicular Radio With Dismount AN/VRC-91A (NSN 5820-01-267-9478) (EIC: L26), SHORT Range/Long Range Vehicular Radio AN/VRC-92A (NSN 5820-01-267-9477) (EIC: L27) Used With Automated Net Control Device (ANCD) (AN/CYZ-10) PRECISION LIGHTWEIGHT GPS Receiver (PLGR) (AN/PSN-11) Secure Telephone Unit (STU) Frequency Hopping Multiplexer (FHMUX) (Including C1)*. 1 December 1998.

TM 55-1500-342-23. *Joint Service Technical Manual for Aircraft Weight and Balance (NAVAIR 01-1B-50)(USAF TO 1-1B-50)(USCG TO 1-1B-50)*. 30 September 2011.

TRADOC Pam 350-70-6. *Systems Approach to Training Analysis*. 7 September 2004.

DEPARTMENT OF DEFENSE PUBLICATIONS

DOD FLIPs are available from: https://www.geointel.nga.mil

DOD Flight Information Handbook. 14 November 2013.

The following publications are available from: www.dtic.mil

DOD MILSTD-2525C Interface Standard: Common Warfighting Symbology. 17 November 2008.

NORTHROP GRUMMAN TECHNICAL SERVICES PUBLICATIONS

The following publications are available from: UAS Project Manager, Unmanned Aircraft Systems, SFAE-AVUAV-TC (Hunter UAS), Building 5300, Redstone Arsenal, AL 35898.

DTM 1-1550-696-CL. *Technical Manual Operator's and Crewmember's Checklist for MQ–1C Unmanned Aircraft System Block 1.*

DTM 1-1550-696-10. *Technical Manual Operator's Manual for MQ–1C Unmanned Aircraft System Block 1.*

FEDERAL AVIATION ADMINISTRATION PUBLICATIONS

The following publications are available at http://www.faa.gov

Aeronautical Information Manual (Federal Aviation Administration) Change 3. 22 August 2013.

FAA-H-8083-9A. *Aviation Instructor's Handbook.* 2008.

UNITED STATES GOVERNMENT PUBLICATIONS

The following publication is available at http://www.gpo.gov/

Title 14 Code of Federal Regulations. *Aeronautics and Space (Host Nation Regulations).* 1 January 2014.

OTHER

The following publication is available at https://safety.army.mil/LinkClick.aspx?fileticket=VZ3nIOuXsYM=&tabid=655

Fratricide: Reducing Self-inflicted Losses. No 92-4, Center for Army Lessons Learned. April 1992.

PRESCRIBED FORMS

DA Form 7740. *MQ–1C Performance Planning Card.*

REFERENCED FORMS

Most Army forms are available online at www.apd.army.mil

DA Form 759. *Individual Flight Record and Flight Certificate–Army.*

DA Form 2028. *Recommended Changes to Publications and Blank Forms.*

DA Form 2408-12. *Army Aviator's Flight Record.*

DA Form 2408-13. *Aircraft Status Information Record.*

DA Form 2408-13-1. *Aircraft Maintenance and Inspection Record.*

DA Form 2408-18. *Equipment Inspection List.*

DA Form 3513. *Individual Flight Record Folder, United States Army.*

DA Form 4186. *Medical Recommendation for Flying Duty.*

DA Form 4507-R. *Crewmember Grade Slip.*

DA Form 4507-1-R. *Maneuver/Procedure Grade Slip*.

DA Form 4507-2-R. *Continuation Comment Slip*.

DA Form 4856. *Developmental Counseling Form*.

DA Form 5484. *Mission Schedule/Brief*.

DA Form 7120-R. *Commander's Task List*.

DA Form 7120-1-R. *Crew Member Task Performance and Evaluation Requirements*.

DA Form 7120-2-R. *Crew Member Task Performance and Evaluation Requirements Continuation Sheet*.

DA Form 7120-3-R. *Crew Member Task Performance and Evaluation Requirements Remarks and Certification*.

DA Form 7122-R. *Crew Member Training Record*.

DD Form 175-1. *Flight Weather Briefing*.

DD Form 365-4. *Weight and Balance Clearance Form F-Transport/Tactical*.

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RAYMOND T. ODIERNO
General, United States Army
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